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STRUCTURAL CHANGES IN THE YEN-DOLLAR RATE IN THE RECENT FLOATING PERIOD: JANUARY, 1973 THROUGH JULY, 1987

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This paper examines whether the particular points of time of structural change in the yen-dollar exchange rate (identified in my previous works) can also be shown as the turning points in a general structural model. To avoid arbitrariness with any regression (structural) model as much as possible, the efficient arbitrage condition in the foreign exchange market is selected as a representative of structural models. Based on the F-test it is shown that those points are consistently recognized as turning points. The test is superior to the time series procedure in that the order of strength of structural change is clear.

I. Introduction

It has been supposed that the poor performance of out-of-sample forecasts by structural models of the exchange rate determination is a possible consequence of structural change at some point of time in the foreign exchange market, and the structural models have not considered such changes adequately (e.g., Meese and Rogoff [31, 32]). This paper focuses on one central question—exactly when such significant structural change occurred in the foreign exchange market.[1] Taking qualitatively heterogeneous data as homogeneous and estimating structural models, whether they are time-series or regression models, would result in a fall in the reliability of models as Backus [4] concluded. Here the author is interested in ascertaining the particular point of time when structural change occurred in the foreign exchange market as the first step to constructing a better model to explain the movements of foreign exchange rates. As an example, the author takes up the Japanese yen/U.S. dollar exchange rate in the recent floating period.

The organization of the paper is as follows: In section II the empirical evaluation and related problems are briefly overviewed. The present author has been investigating to identify the particular points of time of structural changes for seven major exchange rates including the yen-dollar exchange rate in a different model. The results are summarized and

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[1] Thus, the analysis does not concern itself with estimation or insample fit, but is closer in spirit to Gregory and McCurdy [21], and Meese and Rogoff [31, 32].

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discussed briefly in section III. Section IV is devoted to presenting an alternative statistical test of structural change and to identifying the point of time when the yen-dollar exchange rate underwent significant structural change. The final section summarises the main findings from the present investigation.

II. Overview of the Empirical Problems

The widespread adoption of the flexible exchange rate system for the main currencies in the early 1970s has led to both theoretical scrutiny and empirical tests on the accepted approach of the asset market model.[2] The asset market models are classified into two groups, the monetary model and the portfolio balance model. The principal difference between these models is the assumption concerning asset substitutability between domestic and foreign assets.[3] As far as empirical evaluation is concerned, it seems at present to be safe to say that no single model is able to provide a better explanation with flexible exchange rates.[4]

It is unfortunate to reach the conclusion (e.g., Backus [4]) that all existing models are false, although they are comprehensive and, in a sense, sophisticated. Such a disappointing conclusion is further strengthened by the fact that, while some models performed relatively well for the in-sample forecasts, Meese and Rogoff [31] show that the out-of-sample forecasts by structural models were poor. They compared the out-of-sample forecasting performance of the main asset market models against the forward rate, univariate time series, vector time series, and a random walk model of the exchange rate.[5] The random walk model turned out to perform as well as any estimated model of the dollar/mark, dollar/yen, dollar/pound, and trade-weighted dollar exchange rates for up to twelve month forecast horizons. The relative efficiency of the random walk model, however, diminishes as the forecast horizon approaches one year.[6] Nevertheless, this evidence provided by Meese and Rogoff seems particularly damaging to the asset market models since the forecasts of the exogenous variables use actual realized values and hence are free from uncertainty.[7,8]

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[2] There is another accepted approach to the exchange rate determination, which is termed the "flow approach". The flow approach is classified into two categories: (1) Tsiang-Sohmen model, and (2) Mundell-Flemming model. For the former, see, e.g. Tsiang [42], Sohmen [39, 40], and Akiba [2]. For the latter, see, e.g. Mundell [33] and Flemming [12].

[3] The monetary model assumes perfect substitutability of assets, while the portfolio balance model imperfect substitutability. See, e.g., Murphy and Van Duyne [34], Horne [24], and Frankel [13, 14].

[4] For early surveys of the monetary model, see Magee [30] and Kreinin and Officer [27]. Among various studies which made comparisons between monetary models and portfolio balance models, evidence by Genberg [20] and Frankel [13, 14] render support to the monetary model, while those by Lafrance and Racette [28], Murphy and Van Duyne [34] to the portfolio balance model. However, according to the j-test Backus [4] finds all existing models to be inadequate for the Canadian dollar exchange rate.

[5] Of the three structural models examined by Meese and Rogoff, two are monetary models (the flexible price Frenkel-Bilson model, and the sticky price Dornbusch-Frankel model). The last one is a portfolio balance model (the sticky price Hooper-Morton model).

It follows that (and Meese and Rogoff's conclusion is in a sense consistent with this) the future course of exchange rates is, if not impossible, difficult to predict. Such a conclusion is considered part of the increasing amount of evidence. In fact, Isard [25] (p. 15) writes "... no model should be expected to yield more accurate predictions of future spot rates than predictions based on forward rates". Mussa [35] (p. 10) observed that "[T]he natural logarithm of the spot exchange rate follows approximately a random walk". Dooley and Isard [8] (p. 273) also conclude that "[T]o the extent that observed changes in exchange rates are predominantly unexpected, we cannot hope to predict them with much accuracy ex ante".

However, as Meese and Rogoff [32] also indicate, while a random walk model outperforms the out-of-sample forecast for up to twelve months, it is by no means a good predictor. Because some structural models outperform the out-of-sample forecast for longer horizons, the results of Meese and Rogoff are not evidence to reject the asset market approach itself. Rather, Meese and Rogoff merely suggest that possible causes of the poor performance of the structural models could be found in such factors as the instability of the money demand function, or the inadequate modelling of expectations formations, etc. Frenkel [17], on the other hand, stresses that a possible cause of such a very poor predictive performance of structural models of exchange rate determination is due to a failure to distinguish "news" and anticipated realizations of the determinants of exchange rates. Dornbusch [9] points out that expectations about the path of fundamentals affect the current level of the exchange rate. Such a possibility is known as the "Peso Problem". The other three problems enumerated and discussed by Dornbusch are (1) "bubbles", (2) extraneous beliefs, and (3) the "Dollar Problem".[9]

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[6] In fact, Meese and Rogoff [32] show that some structural models outperform the random walk model for a thirty-six month forecast horizon.

[7] In Meese and Rogoff [32] the same conclusion as with the superior forecasting power of the random walk model up to a twelve month forecast horizon is confirmed by a "grid search" technique that imposes some theoretical coefficient constraints.

Lafrance and Racette [28], based on their *estimation*, concluded that Meese and Rogoff's [31, 32] results are premature. It is clear, however, that the former misunderstood the latter; the latter simply asserts that the structural models do not perform better than a random walk model for the *out-of-sample* forecast.

[8] A similar problem is observed and tested extensively for the Canadian dollar for the forward market efficiency hypothesis by Gregory and McCurdy [21].

[9] For the problem of bubbles, see, e.g. Blanchard [6]. For an application to the actual exchange rates, see, e.g. Evans [11].

These possible causes of poor out-of-sample forecasts suggest specification errors in the structural models. A particular specification error may arise, in the present context, if the foreign exchange market undergoes structural changes. To put this differently, these possible causes can be synonymously termed structural changes. Thus, it has been widely agreed with a notion that the poor performance of structural models about the out-of-sample forecasts is due to structural changes in the foreign exchange markets, and that structural models could not take such structural change into consideration adequately.

III. Previous Investigations

The next problem examined is when such structural change occurred and how it can be identified. From the statistical point of view, these two things are not independent, in the sense that a point of time of structural change will, in general, be different for different statistical methods employed. Therefore, in my previous studies (Waragai and Akiba [44, 45, 46]) the movements of exchange rate data were examined strictly. It is natural to focus on the movement of data itself in examining the qualitative characteristics.

In my previous investigation (Waragai and Akiba [44, 45, 46]) a new statistical method (developed by Waragai) was employed. The method is nothing but an application of the AIC one more step further. The AIC stands for Akaike's Information Criterion which has widely been used in the fields of engineering and technology. In these fields the MAIC (minimization of the AIC) method has been used to analyze data when causality is, if not impossible, hard to identify. Since the MAIC method implies minimization of the Kullback-Leibler information measure, it can serve as a powerful alternative to the test of hypothesis method which has inherently an arbitrariness in the determination of the significance level.[10] In Waragai and Akiba [44, 45, 46] the MAIC method was applied one more step further to the analysis of structural change. Such an application of this method has a desirable characteristics in that it is free from some of the arbitrariness in selecting the significance levels.

Naturally a time-series model was employed in Waragai and Akiba [44, 45, 46] to apply the MAIC method, because such a model is normally used for predictions in economics. In particular, an autoregressive (AR) model was employed in order to identify structural changes. The AR model has a prominently desirable feature in that it is free from the problems of arbitrariness arising from the choice of explanatory variables in any regression models to test structural changes.[11, 12]

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[10] It is true that the MAIC method has been used in econometric works. However, as far as the author knows, the application has been confined to selecting the order of time-series models.

Using the MAIC method with monthly observations from January, 1974 for the exchange rates of seven major currencies vis-a-vis the U.S. dollar, the most significant points of time of structural change were identified in Waragai and Akiba [44, 45, 46].[13] The results for the Japanese yen/U.S. dollar rate are summarized in the following Table 1.

TABLE 1

THE POINTS OF TIME OF STRUCTURAL CHANGE IN THE JAPANESE YEN/U.S. DOLLAR EXCHANGE RATE

	Waragai and Akiba [44]	Waragai and Akiba [45]	Waragai and Akiba [46]	
Estimation Period	Jan., 1974–Aug., 1985	Jan., 1974–Sept., 1986	Jan., 1976–Dec., 1984	Jan., 1981–Sept., 1986
Point of time of structural change	June-July, 1980	Sept.–Oct., 1985	June-July, 1978, or Dec., 1978–Jan., 1979	June–July., 1985

Thus, from the purely statistical (the MAIC) method, it is concluded that there exist four or five different points of time of structural change in the yen-dollar rate in the recent floating period.

The next problem is how robust the conclusions summarized in Table 1 from the purely statistical method are, once they are compared with the points of time of structural change obtained from some econometric methods (regressions) based on some generally accepted economic theory.

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[11] As Meese and Rogoff [31, 32] indicate, a univariate time series or a vector time series model has some predictive power. Furthermore, such time series models have another desirable character in that they do not depend on any particular economic theory. Since regression models are in general based on and are supposed to test some economic hypothesis, it is hoped that these two models. i.e., time series models and regression models, serve as a complement to each other.

[12] There are other time series models that could be alternatives to an AR model: An ARMA model with a moving average process, or an ARIMA model in which the time trend can be handled. However, an AR model was selected in Waragai and Akiba [44, 45, 46] because (1) much more data are needed for ARMA or ARIMA models, and (2) interpretation is easier for an AR model. It should be emphasized that "structural changes" include also changes in a trend factor.

The term "structural" change should be interpreted as having purely statistical meaning, although the statistical meaning would include economic meanings.

[13] The seven exchange rates analyzed in Waragai and Akiba [44, 45, 46] are the pound sterling, the Deutsche mark, the Dutch guilder the French franc, the Swiss franc, the Canadian dollar, and the Japanese yen, vis-a-vis the U.S. dollar.

IV. Alternative Statistical Test of Structural Change

The points of time of structural change for the yen-dollar rate identified from the time-series analysis were summarized in the last section. In order to examine whether those points of time of structural change are dependent on the method employed (or, put differently, whether they are robust for different models), a regression model is assumed in this section. At this point, however, we encounter the problem of which model to choose. Since the exchange rate is nothing but "the relative price of national monies" (Branson [7], p. 190), it could be argued that it is more appropriate to select a model from the asset market approach (i.e., either the monetary model or the portfolio balance model), rather than from the flow approach. However, the matter is not so simple in the following two respects: (1) there is, at present, no single model able to give a better explanation with flexible exchange rates, as surveyed in section 11, and (2) there is automatically some arbitrariness (note that, in contrast, a time-series model is essentially arbitrariness-free in this sense).

Thus, the author decided to select the efficiency condition for the foreign exchange market, i.e., the arbitrage condition, for a comparison purpose with the time-series model. If the foreign exchange markets are efficient in open economies, several arbitrage conditions must hold, as shown in Shapiro [38]. One of those efficiency (arbitrage) conditions—the commodity arbitrage—has been referred to as Purchasing Power Parity (PPP, hereafter).[14]

It is well documented that the arbitrage condition (PPP) holds in the long-run.[15] However, it is also well known that the condition does not hold in the recent floating period (e.g., Frenkel [16]), and that, in the short-run, deviations from the condition essentially follow a random walk (e.g., Adler and Lehmann [1], and Hakkio [22]). Thus, the arbitrage condition is stated as the long-run equilibrium condition as follows:

$$\ln \bar{S}_t = \alpha + \beta\,(\ln P_t - \ln P_t^*) \tag{1}$$

where S_t = the spot exchange rate, defined as units of the domestic currency per unit of the foreign currency at time t

P_t = the domestic price level

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[14] It is sporadically argued that PPP is the theory of exchange rate determination. This wrong understanding of PPP, together with the classical quantity theory of money, leads to an even worse impression that PPP is synonymous to Monetarism. It should be stressed that PPP has nothing to do with Monetarism, as strongly argued by Frenkel [18] and Officer [36]. The former argues that PPP is a "short-cut", i.e., reduced form, while the latter writes that the originators of the PPP theory were Spanish scholars of the sixteenth century, members of Salamancan school (not Monetarists). See also Akiba [3] and Rush and Husted [37].

[15] See, e.g., Akiba [3].

The bar (—) over the variable means the long-run equilibrium value, and the asterisk (*) the foreign country.

If we accept the argument of Frenkel [19] that divergences from the arbitrage condition in the short-run actually reflect equilibrating changes. it is possible to write:

$$\ln S_t - \ln S_{t-1} = \lambda\,(\ln \bar{S}_t - \ln S_{t-1}) \tag{2}$$

where λ is the partial adjustment coefficient that indicates the speed at which deviations from the arbitrage condition are corrected through time. The reasons for assuming equation (2) are, as Frenkel [19] observes, that there are continuous changes in real economic condititions that require adjustment in the equilibrium relative prices of different national outputs, and that the prices of national outputs do not adjust fully to shocks in the short-run.[16]

Combining equations (1) and (2), the following expression is obtained:

$$\ln S_t = \alpha\lambda + \beta\lambda\,(\ln P_t - \ln P_t^*) + (1-\lambda)\ln S_{t-1} \tag{3}$$

Under the hypothesis that the arbitrage condition (*PPP*) holds in the long-run, β (the long-run elasticity) should not differ from unity. On the other hand, $\beta\lambda$ (the short-run elasticity of the exchange rate with respect to the price ratio) will be significantly lower than unity if there are short-run deviations from the arbitrage condition.

Equation (3) is estimated by OLS, with a stochastic disturbance with desirable characteristics, for the yen-dollar exchange rate. The samples are monthly observations (end of month) of the exchange rate from January, 1973 through July, 1987 (175 samples).[17] Monthly observations of the wholesale price indices are selected as P and P^*.[18] The following result is obtained (t-values in parenthesis):

$$\underset{}{\ln S_t} = \underset{(1.105)}{0.137} + \underset{(1.246)}{0.031}\,(\text{in } P_t - \ln P_t^*) + \underset{(44.519)}{0.975}\ln S_{t-1} \tag{4}$$

$\bar{R}^2 = 0.970$ (the coefficient of determination, corrected for degree of freedom)

$D - W = 1.823$ (Durbin-Watson statistic)

$h = 1.371$ (Durbin's h-statistic)

The short-run elasticity (0.031) is significantly different from unity, indicating that there were large short-run deviations from the arbitrage condition during the estimated period of floating exchange rate. However, the long-run elasticity is 1.24, showing that these short-run deviations from the arbitrage condition tend to be eliminated through time, although the long-run deviation of 24% from *PPP* is still quite large. The reason for the large deviation is attributed to the small estimated value of λ (0.025), indicating that deviations from *PPP* were corrected very slowly during the sample period. In fact, AAP (average adjustment period), defined as $(1-\lambda)/\lambda$, is 39. This indicates that deviations from *PPP* persisted for more than three years during this sample period.[19]

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[16] See also Bhandari [5] for the delay in full response to shocks in the short-run.

[17] This period includes the estimation periods of Waragai and Akiba [44, 45, 46].

[18] All the data are from International Monetary Fund—International Financial Statistics, various issues.

Test of Structural Change

To infer appropriate policy conclusions from the estimated results of any structural model, it is essential to examine whether there exists a stable relationship over time. There are several ways to test for structural change.[20]

As explained in section 111, the author identified the significant turning points (points of time of structural change) in the yen-dollar rate using a new application method of MAIC. It should be stressed once again that the method has two distinct advantages over the traditional approaches in that it can avoid any arbitrariness in two respects; (1) arbitrariness of determination of the significance levels, and (2) arbitrariness arising from specification of regression models. Thus, the points of time summarized in Table 1 are those points when some specific, important and potentially destabilizing events occurred in the foreign exchange market. The problem here is whether those points would be identified as significant destabilizing points of time in the most general version of efficient arbitrage condition (*PPP*) in international finance.

Since particular points of time when structural changes are suspected to occur are at hand, it is a rather simple matter to calculate the F statistics for an appropriate statistical test for structural change. The statistic is:

$$F_{(k,\, m+n-2k)} = \frac{\{SSR_{(m+n)} - SSR_{(n)} - SSR_{(m)}\}/k}{\{SSR_{(n)} + SSR_{(m)}\}/(m+n-2k)} \tag{5}$$

where

$SSR_{(m+n)}$ = the sum of squared residuals of the pooled regression

$SSR_{(n)}$ = the sum of squared residuals corresponding to the first n observations

$SSR_{(m)}$ = the sum of squared residuals corresponding to the next m observations

k = the number of estimated parameters

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[19] According to Durbin's h statistic, the hypothesis of zero auto-correlation is not rejected.

[20] See, e.g., Frenkel [15] and Vilares [43].

TABLE 2[a]

ESTIMATION RESULTS OF EQUATION (3)

Point of Time of Structural Change	Before the suspected point of time of Structural Change							After the suspected point of time of structural change						
	$\alpha\lambda$	$\beta\lambda$	$(1-\lambda)$	$\overline{R^2}$	$D-W^{(b)}$ $h^{(c)}$	AAP[d]	(c)	$\alpha\lambda$	$\beta\lambda$	$(1-\lambda)$	$\overline{R^2}$	$D-W^{(b)}$ $h^{(c)}$	AAP[d]	(c)
Sept., 1985 (W-A [44])	0.300* (1,934)	0.024 (0.995)	0.946† (34.214)	0.936	1.804 1.284	17.5	153	0.796 (0.859)	0.108 (0.222)	0.851† (5,996)	0.926	2.188 −0.567	5.7	22
June 1985 (W-A [45])	0.261 (1.694)	0.012 (0.489)	0.953† (34.785)	0.938	1.847 0.990	20.3	150	0.516 (0.640)	0.011 (0.025)	0.897† (7.533)	0.956	2.414 −1.246	8.7	25
June 1980 (W-A [43])	0.472* (2.102)	0.096* (1.674)	0.916† (22.976)	0.955	1.878 0.622	10.9	90	0.181 (0.984)	0.113 (1.550)	0.973† (31.534)	0.962	1.856 0.688	36.0	85
Dec., 1987 (W-A [45])	0.482* (2.099)	0.179† (2.636)	0.914† (22.410)	0.955	2.254 −1.141	10.6	72	0.191 (1.242)	0.097* (1.926)	0.970† (36.360)	0.956	1.758 1.270	32.3	103
June, 1978 (W-A [45])	0.392 (1.548)	0.160† (2.829)	0.930† (20.726)	0.922	1.950 0.217	13.3	66	0.134 (0.918)	0.067 (1.431)	0.978† (37.949)	0.948	1.891 0.589	44.5	109

Note: (a) *t*-values in parentheses, (b) Durbin-Watson statistic, (c) Durbin's *h* statistic, (d) APP = $(1-\lambda)/\lambda$ (e) number of observation.
*Significant at 95% level
†Significant at 99% level.

The test is performed under the null hypothesis that there exists an equality of regression coefficients of two equations with n observations and with m observations (i.e., before and after a suspected point of time of structural change). The estimated results (for different suspected points of time of structural change in Table 1) are summarized in Table 2.

Although the test statistic (5) is for the equality of short-run regression coefficients of two equations, another interesting question is if the efficient arbitrage condition holds in the long-run, i.e., if $\alpha = 0$ and $\beta = 1$ from statistical estimation. The result is tabulated in Table 3. This table provides more evidence that the long-run arbitrage condition did not hold in this sample period for the yen-dollar rate, with the wholesale price indices.

Our main concern, i.e., whether there exists a significant structural change at each point of time in Table 1, is examined by the results shown in Table 4. The calculated results are the F statistics of equation (5).

Since the critical value of $F_{(k,\, m+n-2k)} = F_{(3,\, 169)}$ is 2.60 at the 5%, and 3.78 at the 1% level of significance, it is confirmed that those points of time are in fact significant turning points of the yen-dollar rate by the efficiency condition (i.e., an arbitrage condition) of a general structural model. Thus, it is shown that there is a consistency in points of time of structural change between a time-series model and a structural model.

TABLE 3
THE LONG-RUN ELASTICITIES

Estimation Period	$\hat{\alpha}$	$\hat{\beta}$	Estimation Period	$\hat{\alpha}$	$\hat{\beta}$
Jan., 1973-Sept., 1985	5.56	0.44	Oct., 1985-July, 1987	5.34	0.72
Jan., 1973-June, 1985	5.55	0.26	July, 1985-July, 1987	5.01	0.11
Jan., 1973-June, 1980	5.62	1.14	July, 1980-July, 1987	6.70	4.19
Jan., 1973-Dec., 1978	5.60	2.08	Jan., 1979-July, 1978	6.37	3.23
Jan., 1973-June, 1978	5.60	2.29	July, 1978-July, 1987	6.09	3.05

TABLE 4
TESTS OF STRUCTURAL CHANGE FOR THE YEN-DOLLAR RATE

Points of time	Calculated F values
Sept., 1985	5.06
June, 1985	6.12
June, 1980	4.72
Dec., 1978	5.76
June, 1978	4.05

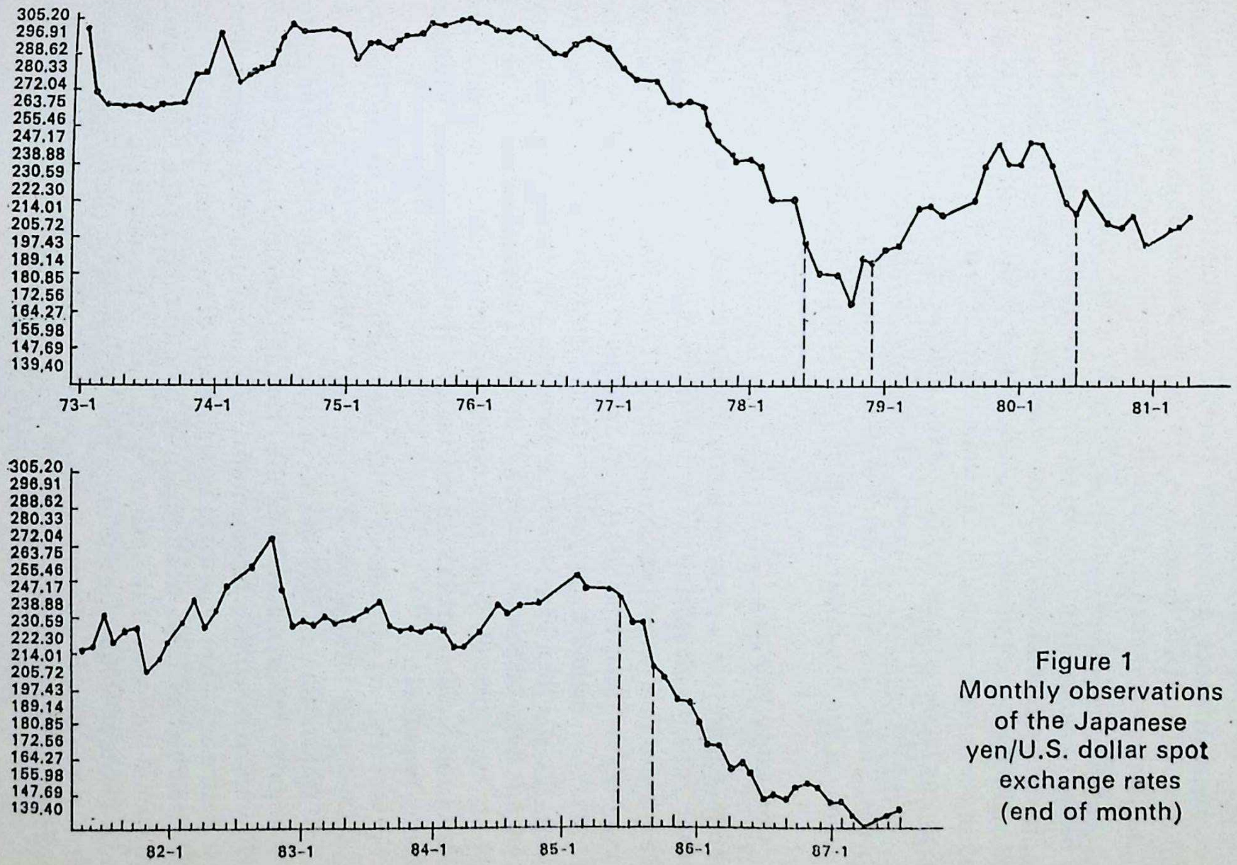

Figure 1
Monthly observations
of the Japanese
yen/U.S. dollar spot
exchange rates
(end of month)

However, there is one advantage of the present test of structural change based on the *F*-test over the MAIC method. Calculated values of MAIC are, as it is well known, very sensitive to selection of the starting point and the end point. Therefore, it is very difficult, if not impossible, to compare whether a point of time of structural change (which is identified by the MAIC method) is stronger or weaker than another point of time of structural change (which is also identified by the MAIC method with different starting and/or end points). However, the test performed in the present investigation is based on the *F*-distribution, and, therefore, is free from such a difficulty (weakness). Thus, it can be concluded that the most significant (the strongest) structural change occurred in June-July, 1985 in the sample period. By the same token, it can be concluded that the yen-dollar foreign exchange market underwent the weakest structural change in June-July, 1978 (among those five candidates). In terms of statistics, there was some deterioration in stability of the arbitrage condition for the yen-dollar rate during the sample period.[21, 22]

V. Concluding Remarks

In this paper the author examines whether the points of time of structural change identified from a time-series model are robust once they are examined in a general structural model. The seriousness of the present investigation is clear. Suppose it were concluded that the result is dependent on the method employed to identify the point of time of structural change. It could then be possible, in principle, that there were as many points of time of structural change as the number of research. Thus, it would be very difficult, if not impossible, to identify which one were true, so that good forecasts of the future course of the exchange rate would be virtually impossible.

Fortunately, it was shown that the particular points of time of structural change identified in Waragai and Akiba [44, 45, 46] are also proved statistically as such points of time in the efficiency condition for the foreign exchange market (i.e., the arbitrage condition). The efficiency condition is selected as a representative of general structural models. Since those points of time are shown to be significant destabilizing points of time, it is hoped that such information can be used to forecast the future course of the yen-dollar rate. If regression models are constructed to take such structural changes into consideration and to regress on the divided sample periods with possibly different regressors, they would have more explanatory power as well as higher accuracy of out-of-sample predictions.

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[21] In Waragai and Akiba [44, 45, 46] brief discussions are given on possible causes of structural change by going into historical data of the yen-dollar rate.

[22] For the movement of the actual yen-dollar rate, see Figure 1.

In economics it is important to make a clear distinction between transitory (or fluctuating) factors and semi-permanent (or relatively constant) factors. Economic analysis of the former factors would be difficult (or impossible) if structural changes were ignored, since the "structure" is essentially a semi-permanent factor. This point was emphasized by Keynes [26] some fifty years ago:

> "Economics is a science of thinking in terms of models. . . . The object of a model is to segregate the semi-permanent or relatively constant factors from those which are transitory or fluctuating so as to develop a logical way of thinking about the latter, and of understanding the time sequences to which they give rise in particular cases" (pp. 296–7).

The present investigation follows this remark using a statistically different method from that employed in my previous works (Waragai and Akiba [44, 45, 46]).[23]

Acknowledgement

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AN EDUCATIONAL "MIRACLE" IN THE THIRD WORLD*

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The author pays particular attention to the strategic role played by social technology which he defines as a collective or individual progress of one's professional skills. These are therefore not confined to skills directly linked to production processes, but include organizational and managerial skills of complete economic systems, the distribution of goods and services, the establishment of needed infrastructures, innovations, research, etc. The key to the social aspect of technology is education. The author analyzes the development of skills, i.e., he studies the four-step training system in developed countries (literacy, primary education, secondary and higher education), and then describes the situation in developing countries. Comparing the circumstances in both groups of countries, the author states that, despite significant differences in the process and functioning of their educational systems, this is the only area where these countries have somewhat bridged the gap. With the use of mathematical methods, the author concludes that the chronological difference between developed and developing countries is 60–70 years in primary education, 40–50 in secondary education, and 30–40 in higher education. Furthermore, he states that developing countries have recorded an essential breakthrough ("an educational miracle") and have thus achieved one of the important prerequisites for their own technological development.

Since 1950 most of the countries in the Third World have emerged into independence. Their newly-established national governments were keen to accelerate the pace of their economic and social development. But the current thinking at the world level had condemned them to a vicious circle of poverty. They were poor, it was said, because they were poor in capital and skills. Their rapid economic development therefore could be ensured only through receiving as large a flow of foreign assistance as possible. These countries were thus urged to prepare the ground for obtaining an ever-enlarging inflow of foreign capital and skills and technology.

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It is widely accepted that technology is embodied in capital goods and equipment and in skills. But in the final analysis even the capital goods require technical skills for their production. In this sense, then, skill formation is the final embodiment of technology. Technology is thus the key to economic and social progress.[1] It was in recognition of this fact that the Third World countries had set in motion ambitious plans to improve rapidly their skill profiles. This study aims to survey how they have succeeded—at least quantitatively—in this objective over the last thirty years (1950 to 1981).

The basic data used in the study relate to the Third World (including China and socialist countries in Asia) as a whole. The picture is general and would obviously not apply to all countries of the Third World. There are vast differences among these countries. Some have rather advanced skill profiles. In others skill development is just beginning. These differences are of critical importance in understanding the present level of the development of each individual country and in influencing the course of its future.

The study begins with a general consideration of the strategic role of social technology in economic development and then moves on to look back over the advance achieved in the developed countries, both capitalist and socialist, in the field of education over the last century. The next section then reviews quantitatively the expansion of enrolment that has taken place in the Third World since 1950. This is followed by a summary indication of the educational distance between the developed countries and the Third World and of the implications of the findings of this study for the educational transition in the Third World.

I. The Strategic Role of Social Technology

Technology has generally been taken as a constant or a neutral factor in economic theory. It was therefore not considered an important subject for attention. Nor was it assigned any significance in the two-factor (capital and labour) production function. Harrod's model of development assumed a given set of capital-labour relations and no technological development.[2] The urgent pressures of development of the Third World helped centre attention on the role of technology as embodied in capital goals and skills. It is now generally accepted that technology is the key element in economic and social transformation. Most of the past discussions on the role of technology had, however, concentrated upon what might be called physical technology—that is technology embodied in capital goods, equipment, tools and other instruments of production.

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[1] United Nations Conference on the Application of Science and Technology to Development (1963), ECOSOC, *Official Records*, 36th session, Supp. No. 12, p. 7.

[2] Harrod, R. F., "An Essay in Dynamic Theory", *The Economic Journal*, *XLIX* (1939).

Relatively very little attention was given to what might be considered, in a broad sense, social technology.

The publication in 1957 of R. Solow's major study underlined the limitations of the two-factor aggregate production function. It showed that nearly nine-tenths of the growth of per capita income in the United States of America over the four decades up to 1949 was due to technological progress. Only one-tenth could be attributed to inputs of capital and labour.[3] Since then other studies have corroborated the importance of Solow's findings.[4] Technology was thereby brought to the centre of development thinking, at least in academic circles. Examining historical evidence about the several factors which have contributed to the economic development of nations, Kuznets concluded:

"The inescapable conclusion is that the direct contribution of man hours and capital accumulation would hardly account for more than a tenth of the rate of growth in per capita product—and probably less. The large remainder must be assigned to an increase in efficiency in the productive resources—a rise in output per unit of input, due either to the improved quality of resources, or to the effects of changing arrangements, or to the impact of technological change, or to all three."[5]

The three elements mentioned by Kuznets above constitute what may be conveniently called social technology. Defined this way, social technology covers all advances in skills acquired by people—individually and collectively. These skills are not limited only to the process of physical production. They also cover a wide spectrum of individual and social skills: for instance, for organising and managing the efficient working of the entire economic system; the distribution and marketing of goods and services; the provision—at present and over time—of the needed infrastructure; the innovation and introduction of new products and processes; research and development and design engineering, and many others. Social technology thus covers not only the individual's skills employed in the performance of his job, but also the collective influence of the working together of all the components of the economy, including division of labour and economies of scale.

Technology could thus be defined for analytical convenience in terms of its two elements—physical and social, each of which is embodied in capital goods and skills. There is little doubt that education at all levels—and the consequent upgrading of the skill-profile—is the key factor in accelerating the improvement of social technology. It is the most powerful liberating instrument for economic and social progress.

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[3] Solow, R., "Technical Change and the Aggregate Production Function", *Review of Economies and Statistics* (Cambridge, Mass.), vol. 39, 1957, pp. 312–320.

[4] Aukrust, Odd, "Investment and Economic Growth", *Productivity Measurement Review*, European Productivity Agency (Paris, Feb. 1959), p. 37; Schultz, "Capital Formation by Education", *Journal of Political Economy*, vol. LXVIII, No. 6; United Nations, *Development Decade: Proposals for Action* (New York, 1962); Denison, Edward F., "The Sources of Economic Growth in the United States and the Alternative Before Us", Committee for Economic Development, *Supplementary Paper*, No. 13 (New York, 1962).

[5] Kuznets, S., *Modern Economic Growth: Rate, Structure and Spread* (New Haven, Conn., Yale University Press, 1966), pp. 80–81.

It is not easy to measure precisely a country's skill profile. Education may be taken as the basic proxy indicator of progress in skill formation. There are, however, other important elements; for instance, informal education, on-the-job training, learning by seeing, doing and copying and technical education and experience, and so on, which significantly influence the formation of skills. But they are not easy to quantify in comparable numbers.

Even concerning the one single indicator of education, there are several considerations which have a direct impact on its effectiveness—for instance, the structure of education (division between technical and social training), inter-relationships between first, second and third levels of education, and above all the quality of training. Moreover, an expansion of the educational system is a necessary, but not a sufficient, condition for the acceleration of economic and social development. There are many examples of wasted educational investments. Apart from many other factors, it is equally important to ensure that the outputs of the system, that is the skilled men and women, have adequate equipment and tools and are employed effectively in the development process. Moreover, while educational enrolment, skill development and social technology are integrally linked together, it should not be imagined that a mere recital of educational achievements gives an indication of equivalent development of social technology. A system of individual and social motivation and opportunity binds these three together, and its absence could lead to ineffectiveness of education and skill formation. All these qualifications notwithstanding, formal education would still remain perhaps the most important, the largest, and decidedly the most measureable indicator of the advance of a country's skill profile. That is why as an initial attempt this study concentrates on advances in the first, second and third levels of education.

II. Skill Advance in the Developed Countries

In order to appreciate more adequately the changes in the educational profile in the Third World countries, it may be helpful if a broad bird's-eye view were to be taken of the developments in education in the developed countries. It could help show more clearly the points of time when their educational advance gathered momentum, the pace of their advance, and the period of time taken by them to reach the levels current in the early 1950s. Such an understanding would be of considerable significance in appreciating the educational advance already made in the Third

World countries and the future possibilities.

Over the last hundred years, much attention has been given to a study of the history of education. The reform of the educational system has been an active item on the social and political agenda. Changes in curricula and the methods of teaching have been studied by a continuing stream of commissions and committees. And yet, it is striking indeed that a systematic construction of comprehensive series on the levels and rates of development of education at various stages of the past history of the developed countries has so far received relatively limited attention. Long term series on education covering all the developed countries are far more difficult to find than, say, similar series on economic indicators. The description here is therefore only illustrative, pointing to major landmarks in the development of primary, secondary and higher education in only a few developed countries.[6]

In the history of civilizations the temples of worship and the temples of learning were to be found most often under one roof. But until the recent period learning consisted mostly of the three C's: catechisms, classics and counting. Secondary education meant being a journeyman or an apprentice. And higher education barely went beyond the superior faculties: theology, law and medicine. Even Voltaire emphasized the enlightenment of only the elite. Adam Smith advocated education mainly to relieve the boredom of the labourers, and that too in homeopathic doses only. As late as 1903, Mercedez thought that only the world's richest one million families would ever buy motor cars since too few servants had the ability of being trained as chauffeurs. Despite all the popular pressures, education particularly at higher levels was throughout the nineteenth century essentially a privilege of the aristocratic and the very well-to-do. It is only in the recent period, mainly the last decades of the nineteenth century, that education began to be imparted to the large masses of the population of the developed countries.

Illiteracy

In view of this it is not surprising at all that the ratio of illiteracy in mid-nineteenth century Europe was very high. It was over 40 per cent in England and Wales, and France. In Belgium it was around 50 per cent. Seventy-five per cent of all men and 89 per cent of all women in Spain were said to be illiterate in 1860. In Southern Italy, the ratio was as high as 90 per cent of all inhabitants.[7] Even in the United States, where education was given greater importance, the rate of illiteracy was under 40 per cent for the total population in 1877, but as high as 80 per cent for non-white population.[8]

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[6] The main observations in this section are based on the following sources: Birchenough, C., *History of Elementary Education* (London, 1925); Smith, F., *A History of English Elementary Education*, 1760–1902 (London, 1931); Kandel, I. L., *A History of Secondary Education* (London, 1930); *Encyclopedia Britannica* (1959 Edition), vol. VII, *XX* and *XXII*. For a more general discussion of education and economic and technological development, see Landes, David S., *The Unbound Prometheus* (Cambridge, 1969) and Hobsbawm, E., *The Age of Capital*: *1849–1875* (London, 1975).

Primary Education (Level I)

The universality of primary education is a relatively recent phenomenon. Up to the eighteenth century it was limited to the clergy and the aristocracy. The French revolution gave a great push to popular education. But, despite that, the general education of the masses of the people was to remain mostly the concern of the Church in England and France up to the last quarter of the nineteenth century.

Let us take the case of England, the leading industrial nation throughout the nineteenth century. England had 13,000 Church schools with about 400,000 pupils in 1830. Only about three per cent of the total population of England and Wales attended primary schools in 1830. The progress thereafter was rather slow. The numbers of pupils rose to 1.2 million by 1870 or to between 4 and 5 per cent of the population. During the decade of the 1870's Disraeli introduced universal compulsory education, with certain exceptions. There was, therefore, a very rapid expansion between 1871 and 1880. The enrolment in primary education jumped from 1.2 million in 1870 to 4 million by 1881 and to 6 million by 1900, or to some 160 pupils per thousand of population. It may be pointed out in comparison that the ratio for the Third World as a whole was 49 students per thousand of population in 1950 and 137 in 1981.

While England was a pioneer in industrialization, its educational progress was very limited. For illustrative purposes, we may relate the number of pupils in primary schools in a few of the countries in Europe to the relevant school-age population group. At the mid-point of the last century, the proportion was 1:7 in England, 1:9 in France, 1:8 in Holland and 1:6 in Prussia which had fostered primary education more vigorously than elsewhere. Between 1840 and the 1880s the population of Europe rose by 33 per cent, but the number of its children attending school by 145 per cent.[9] This may sound like striking progress, but its annual growth rate was a modest 2 per cent. The comparable rate for the Third World was 5.6 per cent between 1950 and 1981.

Secondary Education (Level II)

The expansion of industry and commerce, the enlargement of services—

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[7] UNESCO, *Progress of literacy in Various Countries* (Paris, 1963), pp. 168 ff; and *World Literacy at Mid-century* (Paris, 1957), pp. 180–181; also, Hobsbawm, *op. cit.*, pp. 58, 227.

[8] United States, *Historical Statistics*, Series H, 384–394.

[9] Hobsbawm, *op. cit.*, p. 111.

both public (civil and military) and private and the extension of the right to vote generated strong popular pressures for a faster increase in secondary education. Even then, its massive rise is a more recent phenomenon than that of primary education. The Bruce Commission was appointed in England in 1894 and the Act dealing with secondary education was passed in 1902. In consequence there was a near doubling of the schools on the grant list from 575 in 1904 to 1,047 in 1914. The number of students enrolled in secondary schools also more than doubled, increasing from 2.9 per thousand of population in 1904 to 5.5 in 1914, or about the same proportion as in the Third World as a whole in 1950. It may be pointed out that even in Africa, educationally the least advanced continent in the Third World, the comparable proportion was over 6 in 1957/58, or in fact higher than in England as late as 1914.

We may examine the experience of the United States. The first public high school was established in Boston in 1821. The proportion of the high school age group attending school rose from only 10 per cent in 1900 to 50 per cent in 1930 and 75–80 per cent in the 1950s. The number of high school graduates per year rose from only 95,000 in 1900 to 1,806,000 by 1960 or by nearly 20 times.[10]

The development of secondary education in Japan was even more striking. The enrolment in secondary schools in as late as 1885 was only 20,000 students. The number increased rapidly to 100,000 by 1900, and around 10 million by 1960, or one hundred-fold in 60 years.[11] The annual rate of growth was very high—8 per cent. But that in the Third World between 1950 and 1981 was even higher—9 per cent.

Higher Education (Level III)

Information about enrolment in higher education is very scattered. During the 14th century, the number of genuine undergraduates working for a degree could not have been much higher than 1500 at Oxford, 2,500 at Bologna and some 3,000 students at the University of Paris.

Enrolment at these Universities is reported to have declined steadily thereafter so that enrolment levels till the early part of the nineteenth century were not altogether dissimilar.

We may illustrate the long-term movement in higher education by an examination of the experience of the United States which has now the World's highest enrolment at the third level of education. But the beginning there was very modest. The number of students at the third level of education in 1870 was only 52,000. This increased to 238,000 by 1900 and to some 2.6 million in the late 1950s, or eleven times. The annual growth rate was around 4 per cent, compared with 9.8 per cent in the Third

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[10] United States, *Statistical Abstract* (1963).

[11] Ministry of Education (Japan), *Education in Asia: A Graphic Presentation* (Tokyo, 1964), p. 29, Chart VIII.

World from 1950 to 1981. The United States had by the 1950s some 16 students per 1,000 of its population. In line with the expansion of University enrolment, the number of graduates coming out of the universities and institutes of higher learning also rose from some 10,000 in 1870 to 500,000 by 1956.[12]

In comparison with the United States the enrolment in universities and institutes of higher learning had been much lower in Western Europe. Comprehensive estimates for the continent as a whole are not available. But it would seem that the enrolment could not have been much higher than 1 to 2 per 1,000 of its population in 1900. It rose to 4 per 1,000 in the late 1950s. It may be added that the comparable level in the Third World as a whole was 0.6 in 1950. The proportion in the Third World in 1981 was over 5 per 1,000 of its population if China is included, and over 7 per 1,000 of the population if China is excluded—that is, higher than in Western Europe in the late 1950s or only a little more than just 30 years ago.

The experience of Japan also underlines that the expansion of enrolment in the third level of education was mostly a 20th century phenomenon. There were barely 10,000 students in universities and institutes of higher learning in 1885. The number doubled to 20,000 by 1900. The pace accelerated thereafter, the number rising to 600,000 by 1960.[13] This means that there was less than one-half student per 1,000 of its population in 1900, or about the same situation as in Africa in 1950. The proportion in Japan rose to about 7 in 1960 or about the same as in the Third World excluding China in 1981. The point to note is that the Third World took only 30 years to attain a rise in this level which was achieved in Japan in 60 years.

The expansion of university enrolment in the Soviet Union is an even more recent phenomenon. As late as 1928 there were only 190,000 students, that is around 1 per 1,000 of its population or not much higher than in the Third World in 1950. This number rose very rapidly to 812,000 in 1940/41 and to 3,258,000 by 1963–4, or some 15 students per 1,000 of its population.[14]

The third level enrolment directly influences the stock of scientific workers available to society. For example, it was reported at the International Conference on the Organisation of Research and Training in Africa, organised jointly by the UNESCO and the Economic Commission for Africa in 1964 that about a century ago the number of scientific workers in West Europe was very low. It was a little above 20 per million of its population or not much higher than in the developing countries at that time.[15] It should be added that the proportion in Western Europe had by 1964 risen to over 2,000 per million of its population, which had more than trebled in the century.

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[12] United States, *Historical Statistics*, series H, 316–326 and H, 327–338.
[13] Ministry of Education (Japan), *op. cit.*
[14] *U.S.S.R. in Figures* (Moscow, 1963).

The review above of the educational change in the developed countries is sketchy. But it helps to pinpoint the major landmarks of the change in the scene to obtain an over-view. The rapid expansion of primary education on any scale began only towards the end of the 19th century in the developed countries, that of secondary education in the early 20th century and that of higher education only around the years of the First World War.

III. Educational "Miracle" in the Third World

The Third World countries had become fully aware, often through very painful experiences of their own, of the superiority of the Western countries in skill formation. Among the very first acts of the newly-formed governments after gaining independence was the establishing of educational plans, setting forth ambitious targets. Till independence, a few students from the Third World were sent to the West for education. But the needs were so vast and the costs so forbidding that there was no real substitute for expanding, as rapidly as possible, national facilities for education at all levels of learning.

The thirty years since 1950 mark a watershed in their history. Whatever views one may have on the quality of education offered or on the priorities established among the three levels of learning (not to mention adult education and other forms of informal training), one fact sharply stands out. There was a veritable educational explosion in the Third World. The thirst of their people for mastering the magic of enlightenment was unquenching. The people absorbed all—bad and good and indifferent—they were offered.

In the process, an educational miracle took place in these thirty years. Its full story yet remains to be told by historians of educational advance. Its magnitude needs to be carefully measured. And its impact on the Third World itself and the world as a whole for the period ahead will have to be adequately assessed. As a beginning, we have put together at least the vast numbers which were involved in this educational miracle (see Table 1).

The information concerning the growth of enrolment between 1950 and 1981 in the Third World (including China and East Asian Socialist countries) and other regions of the world is summarised in Table 1. We have also given comparative data for the developed countries—both capitalist and socialist—for the same period. The table contains information on absolute numbers, the size of the increase between 1950 and 1981, the

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[15] UNESCO and UNECA, *Final Report of the Lagos Conference* (Lagos, 28 July to 6 August, 1964).

TABLE 1

EDUCATIONAL ADVANCE IN THE DEVELOPED COUNTRIES AND THE THIRD WORLD: 1950, 1981

Areas and enrolment levels	1950	1981	Increases 1950–1981	Index (1950 = 100)	Annual Growth	Share in world totals 1950	1981
	in millions					in per cent	
Developed Countries[a]							
Level I	112	120	8	107	0.2	57	21
Level II	31	87	56	280	3.4	76	36
Level III	5.4	30	25	555	5.7	85	62
Total	148	237	89	160	1.6	60	27
Third World[b]							
Level I	80–90	456	370	535	5.6	43	79
Level II	10	153	143	1430	9.0	24	64
Level III	1	18	17	1800	9.8	15	38
Total	90–100	627	530	670	6.3	40	73

World							
Level I	200	576	376	288	3.5	100	100
Level II	41	240	200	585	5.9	100	100
Level III	6.4	49	43	670	6.3	100	100
Total	250	865	620	346	4.1	100	100

Sources: For 1950, *UNCTAD*, *Co-operative Exchange of Skills among Developing Countries: Policies for Collective Self-reliance* (TD/B/C.6/AC.4/8/Rev.1); for 1981, Binod Khadria, "Generation and Efficient Utilization of Skills for the Technological Transformation of Developing Countries" (unpubished manuscript, October 1984), based on data from UNESCO, *Statistical Yearbook 1983*.

Notes: Totals may not agree owing to rounding.

[a] Covering OECD countries, USSR and East European countries.

[b] Including China; 1950 figures include rough guesses for Chinese data.

expansion in the number of students enrolled, annual percentage growth rates, and relative shares in world totals in 1950 and 1981. The data are sufficiently comprehensive so that there is no need to describe in detail each of the elements. The observations below therefore are only of a summary nature.

Total School Enrolment

The enrolment in all the levels of education from the first to the third one for the world as a whole expanded from 250 million in 1950 to 865 million in 1981. It increased some three and one half times rising annually at 4.1 per cent per year. It may be noted here that during this period the world population increased by some 2,000 million persons. Of this increment, as many as 620 million, or nearly one-third of the entire rise in world population, were absorbed in school enrolment spread over the three levels. It is difficult to imagine any comparable period in world history when the educational expansion was so rapid; the numbers involved are overwhelming.

Of much greater significance was the enlargement of total enrolment in the Third World. It increased from some 90–100 million students in 1950 to 627 million in 1981, or some six and one-half times. The sheer size of the numbers is staggering. It may be pointed out that of the entire increment of 620 million in the world school enrolment, the Third World contributed 530 million, or nearly 85 per cent of the total. Quite clearly, the educational advance of the post Second World War period was mainly a Third World phenomenon.

In consequence there was a decisive reversal of the shares of the developed countries and the Third World in world enrolment. For instance, the developed countries accounted for two-thirds of the world enrolment in 1950, whereas the Third World's share was only one-third. This asymmetry was fundamentally altered by 1981. The Third World's share went up to 73 per cent of the world total.

The share of the developed countries, both capitalist and socialist, shrank to only 27 per cent. These changes have thereby brought the educational shares more or less in line with population shares of both the Third World and the developed countries.

The Third World is far behind the developed countries in many areas: for instance, in per capita national product, industrial output, foreign trade, and several other indicators. But as far as enrolment in education is concerned the Third World has covered in just 30 years the vast gap that separated it from the developed countries in 1950. People will continue discussing the income gap, the food gap, the foreign trade gap, the balance of payments gap, the industrial gap, the technological gap, and several other gaps, which are, or may become, the current fashion. With the enrolment gap now clearly covered by the Third World's lightening sprint, one can write an epitaph for at least one gap.

Primary Education (Level I)

We may quickly review the Third World's advance at the first, second and the third levels of education. Third World enrolment in the first level rose from 80–90 million students in 1950 to over 456 in 1981, or some five times. The expansion was at about 5.6 per cent per year or slightly faster than that (5.4 per cent) in its overall gross national product.

It is noteworthy that in 1950 the developed countries with only 25 per cent of the world population accounted for 57 per cent of the world enrolment in the first level of education. Even in absolute numbers, the developed countries had a 75 per cent larger enrolment in 1950—148 million in comparison with 80–90 million in the Third World. By 1981, however, this share was reduced to 21 per cent. Nearly the entire increment in world enrolment at the first level was from the Third World. In consequence, the Third World share in first level world enrolment rose to 79 per cent. This was slightly higher than its share in world population, reflecting in part the predominance of younger age groups in its population. The enrolment gap, both in absolute numbers and in relative shares, was closed.

In 1950, a bare 5 per cent of the population of the Third World was in primary schools. By 1981, the share had risen to 14 per cent. One out of every 7 persons in the Third World is now absorbed in primary education, deciphering the magic of the written word. The comparable level for the developed countries is 10 per cent, again reflecting in part the larger share of the aged in their population.

Secondary Education (Level II)

Between 1950 and 1981, the enrolment of the Third World students at the second level grew at about 9.0 per cent per year, or faster than that for the first level of education. The total number in its secondary schools has gone up from only 10 million in 1950 to 143 million in 1981, or some 14 times. Per thousand of its population, there were less than 6 students at the second level in the Third World in 1950; by 1981 this number had risen to 46, or higher than the level current in the developed countries in 1950 (see Table 2).

In 1950, the developed countries had 31 million students at the second level, or three times more than those in the Third World. These relationships were almost reversed by 1981. The Third World now has 75 per cent more students enrolled in its secondary schools than the developed ones have in theirs. The big gap in absolute numbers has by now been covered.

As a result of differences in the relative growth rates in the Third World and the developed countries, the Third World has improved its comparable position from 24 per cent of the World total in 1950 to 64 per cent by 1981—that is, raising its relative share by 40 percentage points in 31 years, of by 1.3 percentage point each year. If these rates are

TABLE 2

EDUCATIONAL DISTANCE BETWEEN THE DEVELOPED COUNTRIES AND THE THIRD WORLD: 1950–1981

	1950	1981	Change 1950–1981
	(Number per thousand of population of each area)		
I. AREAS AND ENROLMENT LEVELS			
Developed countries[a]			
Level I	149	103	−46
Level II	41	74	33
Level III	7.2	26	19
Total	197	203	6
Third World[b]			
Level I	49	137	88
Level II	5.7	46	40
Level III	0.6	5.4	4.8
Total	54	188	134
World			
Level I	80	128	48
Level II	16	53	37
Level III	2.6	10.9	8.3
Total	98	192	94
	(Number in millions)		
II. POPULATION			
Developed countries	750	1,170	420
Third World	1,750	3,330	1,580
World	2,500	4,500	2,000

Sources: For 1950, UNCTAD, *Co-operative Exchange of Skills among Developing Countries: Policies for Collective Self-reliance* (TD/B/C.6/AC.4/8/Re.1); for 1981, Binod Khadria, "Generation and Efficient Utilization of Skills for the Technological Transformation of Developing Countries" (unpublished manuscript, October 1984), based on data from UNESCO, *Statistical Yearbook 1983*.

Notes: Totals may not agree owing to rounding.

[a] Covering OECD countries, USSR and East European countries.

[b] Including China; 1950 figures include rough guesses for Chinese data.

continued, it is easy to see that the Third World enrolment in the second level of education will in less than a decade be on par even on a per capita basis with that in the developed countries. At the past rates, such a transition should occur by or around 1990. Not all that far away!

Higher Education (Level III)

Pride of place for Third World achievement in education belongs to higher education. The most impressive expansion has taken place in enrolment in universities and institutes of higher learning in the Third World. There were less than 1 million students in such institutions in 1950. The numbers multiplied to 18 million by 1981, or 18 times. They were growing at 9.8 per cent per year, or doubling every seven years. This rate of growth of enrolment at the third level was nearly twice as high as that of the combined GNP of the Third World countries.

It should be noted here that of the 30 million students enrolled at the third level in the developed countries, nearly one-half million are overseas students from the Third World.[16]

Education at the third level was mainly a developed country monopoly in 1950. As high as 85 per cent of the world enrolment in this level was concentrated in the developed countries. In 1950, only 1 out of every 7 students enrolled in higher education came from the Third World. There was a big change in this one-group concentration by 1981. The Third World's share in higher education rose to 38 per cent. Four out of every 10 students enrolled in institutions of higher learning came from the Third World in 1981. It should perhaps be added that this share would have been even higher were it not for the fact that the cultural revolution in China had decimated its enrolment at the second and third levels. The ground lost is now being rapidly covered by China with the result that its high rates in future will help raise, rather than lower as in the past, the growth rate of third level enrolment.

The Third World has raised its share in world enrolment in higher education from 15 per cent in 1950 to 38 per cent by 1981, or by about 0.7 percentage points per year. If the past growth rates continue in both the areas, these shares should be equal in about 15 years. It would take longer to reach equality on a per capita basis—say, half a century or so from 1981, based on a simple extrapolation of past trends.

It would seem, however, that such a simple extrapolation would be unrealistic in view of the fact that the 15–24 year age-group of the population of the developed countries is estimated to decline at an annual rate of 0.3 per cent between 1980 and 2000.[17] The past growth in third level enrolment in the developed countries, particularly rapid up to the early 1970s, is unlikely to be sustained for this reason. It may well be that the actual rate might be nearer zero, as has been the case in recent years, or only marginally above. In that case, the educational transition for third level enrolment—shares being equal to population shares—would require a five-fold rise in Third World enrolment in higher education. A continuation of the past growth—9.8 per cent per year—could accomplish this in some 20 years, or just around the turn of the twentieth century.

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[16] For a discussion of an alternative scenario, see Khadria, Binod, "Generation and Efficient Utilization of Skills for the Technological Transformation of Developing Countries" (an unpublished study prepared for the UNCTAD secretariat, October, 1984).

It need no emphasis that the contours of the transition and period it would take depend on the relationship between the growth rates of third level enrolment in the two groups of countries. The logic of numbers and growth rates simply compel the conclusion that this is a matter of a few decades. The age of enlightenment for the Third World is not endless centuries away. It is easily forgotten that growth rates cannot be considered in quite the same way as the speed of cars; three times the speed would need one-third the time for covering the given distance. A nine per cent growth rate is three times as high as a three per cent one, but in 30 years the final outcome is 13-fold at the former and only 2.3-fold at the latter—the ratio of rates being 3, but of outcomes 6. The ratio rises rapidly as the dimension of time is extended: for fifty years, it would be 17. This is all rather simple and straightforward, and need not have been stressed here, but it is too often overlooked in growth dynamics.

IV. Educational Distance Among Nations[18] and its Implications

The preceding review of education developments in the Third World since 1950 brings strikingly home a number of conclusions of considerable operational significance. Some of the more important ones may therefore be briefly summarized.

To begin with, the nineteenth century educational landscape in the most developed countries was not altogether dissimilar from that in the Third World in the 1950s. Broadly stated, the rapid development of primary education began in the developed countries during the closing decades of the nineteenth century, that of secondary education in the first decade of the twentieth, and of higher education only around the First World War if not later. These benchmarks are very approximate for experience varied from one developed country to another. Bearing this in mind, the educational distance between the developed countries and the Third World around the 1950s, if measured in terms of years, would appear as follows:

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[17] *Ibid.*

[18] For an earlier discussion of this subject, see Patel, Surendra J., "Educational Distance between Nations: Its Origin and Prospects", *The Indian Economic Journal*, Vol. XIII, No. 1: July–September 1965.

—primary education	60–70 years
—secondary education	40–50 years
—higher education	30–40 years

Second, the advanced countries had developed by 1950 a considerable lead over the Third World countries in all the three levels of education. They accounted for some 30 per cent of the world population. But their share in world enrolment was 57 per cent for primary, 76 per cent for secondary and as high as 85 per cent for higher education. The Third World countries were plainly on the periphery of educational progress.

Third, the educational advance in the Third World between 1950 and 1981 has been simply spectacular. A "miracle", according to its dictionary definition, is an event inexplicable by natural laws and so ascribed to divine or supernatural action, or a marvel, an extraordinary event or object. The Third World's educational progress was by no means promoted by divine or supernatural forces. It was the crowning result of hard effort involving immense costs in financial and human resources. By any standards, it was a miracle, a marvel, an extraordinary event. By 1981, the Third World had, on a comparable per capita basis,

—equalled (or surpassed) the levels of primary enrolment in the developed countries;

—reached mid-1950 levels of secondary enrolment in the developed countries; and

—nearly attained the levels of enrolment in higher education in the developed countries in 1950.

Fourth, the educational distance between the two groups of countries is being rapidly covered. The gap in primary education, as described above, was practically closed by 1981. The attainment by the Third World of the second level enrolment levels in the developed countries is only a decade away and those for third level not much more than two to three decades away. Thus, catching up with comparable numbers is no longer a visionary's dream, a fantasy of the day-dreamer. It has become plainly a task manageable in a finite time framework. That by itself is a landmark.

Fifth, the implications of this catching-up. It should be recalled that heated debates are going on about several questions: for example, the ways of improving the quality of education in the Third World; the drop-out and stay-on ratios, the appropriate choices in devoting resources to one or the other level, type or the form of education; the provision of mass literacy, democratization of education by reducing the resources catering to the needs of the elites; the wastefulness of creating so many educated unemployed; decisions on the relevance of several types of education, such as, liberal, vocational and technical and scientific, and elements to be included in this or that type of strategy and plans to be followed in the future. These debates are very essential; their results have a direct bearing on the future. The problems are very real, and they merit continuous attention. They cannot, however, obscure the fact that the batteries of skilled men and women who will be called upon to steer the technological transformation of the Third World countries are now all on the scene in most of these countries.

Finally, many problems still remain to be solved before the newly acquired skills begin to yield dividends in terms of extra output and additional personal satisfaction, since education, we must remember, is at the same time both an investment and a consumption good. Like mercy, it benefits the nation which gives it, and the citizens who receive it. The stock of skilled personnel is still small, since there is a time-lag between enrolment and graduation and between graduation and seasoning of the graduates by experience. It is too young, over 75 per cent of it being under the age of 40. The quality and the relevance of education needs to be improved considerably. There are yet miles to go in this respect. In many instances, the critical mass has not yet been reached. Nearly everywhere the complementary infrastructure—equipment, facilities, laboratories, institutions, R & D resources incentives—is very poor, and the interlinkages among disciplines and sectors are nearly non-existent. Individual and social motivation matters most in bringing about an efficient utilization of skills already acquired; there is great scope for improvement here. In consequence of all these weaknesses, collective efforts do not yet yield benefits larger than the sum of individual components. All these and many other shortcomings remain to be overcome to ensure an optimal use of the skill capacities which at great cost and sacrifice have been built up over these years. They need to be studied carefully, and their incidence has to be clearly identified so that each country devises an appropriate educational strategy to guide its development plans.

We have only given an overall image of the educational transformation of the Third World. The attainments vary from country to country. Several countries are far better and many others far behind, particularly the least developed ones; they were late-starters and their progress will no doubt require even more vigorous efforts in the future. And yet, the fact stands out that the thirty years have witnessed an immense advance the impact of which will be felt in the years ahead. Despite all the problems outstanding, one would still have to say in admiration of these three decades: "What a great sprint it was!"

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COMPARISON OF REGIONAL INPUT-OUTPUT TABLES—RAJASTHAN, PUNJAB AND HARYANA*

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The input-output analysis has been used very widely to analyse a wide range of problems of national economy. In India too, input-output tables have been prepared to study the structure of the economy and to provide a basis for planning models.

The use of input-output tables in Indian plans evoked a great interest in the preparation of regional input-output tables in India.

For the State of Punjab, Rangnekar constructed an input-output table for the year 1957. Baldota and Venkatramaiah of the Gokhale Institute of Politics and Economics constructed a rectangular input-output matrix for the manufacturing sector of Maharashtra for 1961. Kashyap and Alagh of the Sardar Patel Institute of Economics and Social Research analysed the structure of Gujarat's economy with the help of an input-output matrix at producers' prices for the year 1964–65. Likewise, Bhalla has explained the structure of Haryana economy with the help of inter-industrial flow matrix for the year 1969–70.

In another study Alagh, Bhalla and Kashyap analysed the structure of Gujarat, Punjab and Haryana economies in the framework of Input-output analysis.

For the state of Rajasthan, Mehta analysed the structure of Rajasthan's economy for the year 1970–71 by classifying the economy into 49 sectors.

The present study is an attempt to compare the regional input-output models of Rajasthan, Punjab and Haryana respectively. A regional input-output table has been compared to some other regions input-output tables to further depict the structure of the two economies. The main objectives of the study are to study the technological differences between the industrial sectors of the three states and to know the dominance of a

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*Rajasthan, Punjab and Haryana are states in the Indian Union.

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TABLE 1

COMPOSITION OF RAJASTHAN, PUNJAB AND HARYANA INPUT-OUTPUT TABLES

No.	New sector name	Sectors included		
		Rajasthan	Punjab	Haryana
1.	Agriculture and allied	1 to 8 & 13	1 to 9	1 to 8
2.	Sugar, gur and confectionary	16	13	13
3.	Edible oils	17	14	14
4.	Animal husbandry	9	10	10
5.	Cotton textiles	20	17	16
6.	Other textiles	21	16	15
7.	Printing and publishing	25	20	19
8.	Leather and rubber products	26, 27	21	20
9.	Chemical products	29, 30	22, 23	21
10.	Basic metal industries	34	25	23
11.	Metal products	35	26	24
12.	Electrical machinery	37	28	26
13.	Machinery except electrical machinery	36	27	25
14.	Glass and mineral products	31	24	22
15.	Transport equipment	39	30	28
16.	Scientific instruments	41	33	30
17.	Electric light and power	45	36	32
18.	Miscellaneous industries and construction	43, 44	34, 35	9, 31
	Other sectors not classified elsewhere	10, 11, 12, 13, 15, 18, 19, 22, 23, 24, 28, 32, 33, 38, 40, 42, 46, 47, 48, 49	11, 12, 15, 18, 19, 29, 31, 32	11, 12, 17, 18, 19, 20, 27, 29

particular sector in a state. The basis of selection of the states was the level of per capita industrial output. Haryana, as we know, is a highly industrial state, where the per capita industrial output is 'high'. Punjab, on the other hand, has a 'medium' per capita industrial output while in Rajasthan, the per capita industrial output is 'low'. The main sources of the data are the studies of Alagh, Bhalla, Kashyap and Mehta as mentioned above. The year of reference for the input-output table of Rajasthan is 1970–71 while for Punjab and Haryana, it is 1969–70. The time difference of an year is not significant in input-output analysis because the coefficients have a tendency to remain stable upto a certain period. The sources and compilation of data for these three input-output tables differ from state to state. It is, therefore, pertinent to first of all resectorise the economy of each state. The input-output matrix of each state is brought to a common level by aggregating the different number of sectors in each state. The 49 × 49 matrix of Rajasthan, the 36 × 36 matrix of Punjab and 32 × 32 matrix of Haryana were grouped to a common matrix of 18 × 18 sectors. Special attention was paid, while selecting these sectors, that the majority of sectors typical to each economy could be clubbed properly. Table 1 shows, then, the composition of Rajasthan, Punjab and Haryana Input-output tables. We naturally had to opt for such sectors which were found common in all the three states. Otherwise the purpose of our study would not have been fulfilled.

Similarly Table 2 refers to the sectorisation of Rajasthan, Punjab and Haryana's economy. In this study, sectorisation has been done mainly with a view to having as detailed and meaningful a picture of the economy of the three states as possible within the limitation imposed by the availability of data. On the basis of this sectorisation we constructed the Input-output flow and the technological coefficient matrices for Rajasthan, Punjab and Haryana's economy at producer's prices. Another major work needed by us for comparison was to calculate the inverse matrices for these three states by further manipulation.

By reviewing the literature on the comparison of input-output tables, we were able to conclude that the following methods are popular in conducting such a study:

(1) Gross output method
(2) Sectoral output multipliers method
(3) Rasmussen's backward and forward linkage method
(4) Coefficient of mean difference (MD) method.

The above methods have been analysed for the three states in a comparative form.

(1) Gross Output Method

To compare the economic structure of Rajasthan, Punjab and Haryana one of the methods which has been used is the Gross Output Comparison

TABLE 2

SECTORISATION OF RAJASTHAN, PUNJAB AND HARYANA'S ECONOMY

S. No.	Sector	Composition of the sector
1	Agriculture and allied	Wheat, rice, bajra, sugarcane, cotton, gram, pulses, oil seeds, jowar, maize, barley, potatoes, chillies, green fodder, jute, vegetables and fruits.
2	Sugar, gur and confectionary	Sugar, gur, manufacture of cocoa, chocolate and sugar confectionery.
3	Edible oils	Manufacture of edible oils and hydrogenated oils (Vanaspati).
4	Animal husbandry	Breeding and rearing of animals, poultry and eggs, raw wool, production of milk and milk products, preparation of meat and slaughter house by products, production of raw hides, skins, bones, other animal husbandry.
5	Cotton textiles	Ginning, pressing, spinning, cleaning, weaving.
6	Other textiles	Woollen textiles, silk textiles, artificial silk textiles, wool balling, man made fibre textiles.
7	Printing and publishing	Printing, publishing and allied industries.
8	Leather and rubber products	Manufacture of footwear, tanneries and leather finishing plants, manufacture of products except footwear and other wearing apparel, manufacture of rubber products.
9	Basic metal industries	Iron and steel basic industries, non-ferrous basic metal industries.
10	Metal products	Manufacture of metal products except *machinery and transport equipment.*

11	*Electrical machinery*	Manufacture of electrical machinery, apparatus, appliances and supplies.
12	Machinery except electrical	Manufacture of machinery except electrical machinery.
13	Glass and mineral products	Manufacture of glass and glass products, manufacture of pottery, China and earthern ware, manufacture of non-metallic mineral products n.e.c.[1]
14	Transport equipment	Manufacture of transport equipment n.e.c., manufacture of motor vehicles, repair of motor vehicles.
15	Scientific instruments	Manufacture of professional and scientific measuring and controlling instruments.
16	Electric light and power	Electric light and power generation, transmission and distribution of electric energy, gas manufacturing and distribution.
17	Miscellaneous industries and construction	Manufacture of photographic and optical goods, manufacture of watches and clocks, manufacture of jewellery and related articles, manufacture of musical instruments, manufacturing, industries n.e.c. The scope of construction industry covers all own-account construction activity in addition to the construction activities carried out by the special trade contractors, carpenters, plumbers, etc.

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[1] Not elsewhere classified.

Method. In this method we have calculated the gross output of each sector as a share of total gross output. By calculating these shares we are able to see the relative positions of the sectors by size. By comparing these results, we are able to compare the economic structure of the three states by noting the differences and similarities in relative size of sectors. These gross outputs expressed as percentages of the total are given in Table 3.

TABLE 3

SECTOR GROSS OUTPUT SHARE

Sector No.	Gross output share (per cent)		
	Rajasthan	Punjab	Haryana
1	63.6906 (1)	32.9840 (1)	44.1982 (1)
2	0.1997 (16)	0.5554 (16)	0.9192 (15)
3	1.2626 (6)	3.6318 (5)	1.7131 (12)
4	17.7796 (2)	25.8128 (2)	23.1549 (2)
5	3.1739 (4)	2.8707 (7)	3.8181 (4)
6	1.7489 (5)	8.0172 (4)	3.8948 (3)
7	0.1479 (17)	0.2277 (18)	0.3283 (18)
8	0.3827 (12)	1.3192 (13)	1.8313 (10)
9	0.2524 (15)	2.2800 (8)	0.5834 (16)
10	1.0334 (9)	2.2529 (9)	1.7609 (11)
11	0.3279 (14)	2.1643 (10)	1.6632 (13)
12	0.6428 (11)	0.6739 (15)	2.6385 (8)
13	0.9783 (10)	3.0147 (6)	2.7542 (7)
14	0.0792 (18)	1.9383 (11)	2.0653 (9)
15	0.1415 (8)	0.7320 (14)	0.4855 (17)
16	0.3516 (13)	0.3687 (17)	3.3713 (6)
17	1.1476 (7)	1.3772 (12)	1.0539 (14)
18	6.6594 (3)	9.7792 (3)	3.7659 (5)
Total	100.0000	100.0000	100.0000

The results in this table explain differences as well as similarities. The estimates suggest that Agriculture and Allied (1)* is the most important sector in all the three states in terms of its contribution to their respective economies. In Rajasthan, its contribution is 63.69%, in Punjab 32.98% and in Haryana it comes out to be 44.20%. The sector Animal Husbandry (4) is the next important sector for all the three states. A trace of similarity can then be noticed between Rajasthan and Punjab in sugar, gur and confectionery (2) differing only by 0.8%. In both the states the ranking of Basic Metal Industries (10) and Miscellaneous Industries and Construction (18) is similar.

Rajasthan and Haryana are similar in so far as the sector Cotton Textiles (5) is concerned. In the same way, Punjab and Haryana share almost similar contribution as regards their share of gross output in printing and publishing (7). The table further reveals that leaving apart the similar sectors in the three states or any two of them, relative positions in sectors differ only by 1 to 2 per cent. They are edible oils (3), leather and rubber products (8), metal products (11), glass and mineral product (14), transport equipment (15) and electric light and power (17).

Striking differences are found to exist in textiles (6), chemical products (9), electrical machinery (12), machinery except electric (13), scientific instruments (16) and misc. industries and construction (18), when all the three states are compared at a glance.

This shows that Rajasthan economy is heavily agro-based, whereas Punjab can be said to have a mixed economy but Haryana has mainly an industrial economy.

(2) Sectoral Output Multipliers

The Leontief input-output model enables us to analyse the impact of changes in expenditure upon outputs of the industries which are given by the elements of the Leontief inverse. The multipliers differ from sector to sector and their values depend on where the initial impulse is directed. The input-output analysis thus brings out clearly the fact that the choice of industries regarding allocation of government expenditure is an important one for public authorities. Thus this type of exercise can be of immense help to the planning authorities.

In the present study an attempt has been made to calculate the direct and indirect output multipliers for Rajasthan, Punjab and Haryana economies. Methods of computation of different multipliers are as follows:

Computation of Direct and Indirect Output Multipliers

(1) Direct multiplier per unit change in final demand (DF)† Z_{ii}

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[*] Figures in parentheses depict the number of sectors as per Sectorisation.

[†] Where Z_{ij} are the elements of the $(I-A)^{-1}$ matrix.

(2) Direct plus indirect multiplier per unit change in final demand (IF) $\sum_{j=1}^{n} Z_{ji}$

(3) Linkage multiplier (LM) = Direct + Indirect multiplier $\dfrac{\sum_{j=1}^{n} Z_{ji}}{Z_{ii}}$

(4) Direct plus indirect multiplier per unit change in output $\dfrac{\sum_{j=1}^{n} Z_{ji}}{Z_{ii}}$

Comparison by Output Multipliers

Tables 4 to 6 give the output multipliers of Rajasthan, Punjab, and Haryana respectively. A glance at the direct output multipliers (DF) of the three states reveals that there is not a single sector which enjoys the same rank in Rajasthan, Punjab, and Haryana. This may be due to the fact that there are differences in the economic structures of the three states. When we compare Rajasthan and Punjab, the approximate similarities in ranking are observed in Sugar, Gur and Confectionery (2), Animal Husbandry (4), Leather and Rubber Products (8), Electrical Machinery (12) and Transport Equipment (15). On the other hand, if we compare Rajasthan and Haryana we observe similarities in the rankings of Animal Husbandry (4), Printing and Publishing (8), Chemical Products (9), Basic Metal Industries (10), Electrical Machinery (12), and Scientific Instruments (16). Moreover, by comparing Punjab and Haryana we find that sectors as Agriculture and Allied (1), Cotton Textiles (5), Printing and Publishing (7), and Electrical Machinery (12) have the same rankings. From this we can conclude that the technological structures of Punjab and Haryana are similar in so far as the above sectors are concerned. Beyond this, there are significant differences.

Coming to the indirect output multipliers (IF) for the three states, we find that the sectors Agriculture and Allied (1), Edible Oils (3), Printing and Publishing (7), Leather and Rubber Products (8), and Electric Light and Power (17) are enjoying common ranks.

Lastly, opting for linkage multipliers (LM), it is evident from the tables that the Rajasthan, Punjab and Haryana have common traits in Edible Oils (3), Basic Metal Industries (10), and Electric Light and Power (17). Rajasthan and Punjab have common rankings for Glass and Mineral Products (14).

The calculations of rank correlation between the output multipliers for the three states revealed the value of $\rho = 0.5087$ for Rajasthan and Punjab, $\rho = 0.7440$ for Rajasthan and Haryana and $\rho = 0.7668$ for Punjab and Haryana. These values made it clear that the economic structures of Punjab and Haryana are much more similar in relation to the structural

TABLE 4
DIRECT AND INDIRECT OUTPUT MULTIPLIERS FOR RAJASTHAN

S. No.	Sectors	D_F	I_F	I_0 or L.M.
1	Agriculture and Allied	1.11850823 (4)*	1.32252137 (15)	1.18239750 (14)
2	Sugar, Gur and Confectionary	1.11623450 (6)	1.96731367 (6)	1.76245550 (5)
3	Edible Oils	1.02165026 (16)	2.19860173 (3)	2.15201000 (2)
4	Animal Husbandry	1.05883549 (11)	1.50322214 (12)	1.41969370 (11)
5	Cotton Textiles	1.4075662 (2)	2.00449626 (4)	1.42408660 (10)
6	Other Textiles	1.11273168 (7)	1.67242747 (9)	1.50299250 (8)
7	Printing and Publishing	1.02922159 (17)	1.11554192 (17)	1.00386940 (16)
8	Leather and Rubber Products	1.11818042 (5)	1.65537432 (10)	1.48041790 (9)
9	Chemical Products	1.20361818 (3)	1.46441973 (13)	1.21668120 (13)
10	Basic Metal Industries	2.26769418 (1)	2.48706874 (1)	1.09673900 (15)
11	Metal Products	1.07761224 (8)	1.98482982 (5)	1.84187760 (3)
12	Electrical Machinery	1.07635632 (9)	2.42120281 (2)	2.24944360 (1)
13	Machinery except Electrical Machinery	1.04922354 (13)	1.90266545 (7)	1.81330810 (4)
14	Glass and Mineral Products	1.06273427 (10)	1.11715580 (16)	1.05120890 (17)
15	Transport Equipment	1.03740466 (15)	1.43608164 (14)	1.38430210 (12)
16	Scientific Instruments	1.05164571 (12)	1.70970800 (8)	1.62574520 (6)
17	Electric Light and Power	1.04239760 (14)	1.04497122 (18)	1.00246890 (18)
18	Misc. Industries	1.00273723 (18)	1.51717615 (11)	1.51303470 (7)

*Figures in parentheses indicate ranks.

TABLE 5

DIRECT AND INDIRECT OUTPUT MULTIPLIERS FOR PUNJAB

S. No.	Sectors	D_F	I_F	I_0 or L.M.
1	Agriculture and Allied	1.09428894 (8)*	1.36355903 (14)	1.24606850 (10)
2	Sugar, Gur and Confectionery	1.23163361 (5)	2.17757904 (4)	1.76804120 (3)
3	Edible Oils	1.11233872 (7)	2.23866949 (3)	2.01257890 (2)
4	Animal Husbandry	1.02284803 (13)	1.23939140 (15)	1.21170630 (13)
5	Cotton Textiles	1.01953609 (15)	2.25635201 (2)	2.21311650 (1)
6	Other Textiles	1.73118508 (2)	2.10868373 (5)	1.21805790 (11)
7	Printing and Publishing	1.00259464 (18)	1.18593252 (16)	1.18286340 (14)
8	Leather and Rubber Products	1.33793480 (4)	1.66983338 (8)	1.24806780 (9)
9	Chemical Products	1.17730727 (6)	1.43343475 (12)	1.21779620 (12)
10	Basic Metal Industries	1.50105080 (3)	1.53941089 (10)	1.02555540 (16)
11	Metal Products	1.01184433 (16)	1.59977958 (9)	1.58105300 (6)
12	Electrical Machinery	1.03756188 (11)	1.83308732 (6)	1.76672580 (4)
13	Machinery except Electrical Machinery	1.05669440 (9)	1.46685756 (11)	1.38815670 (7)
14	Glass and Mineral Products	2.29008109 (1)	2.33105046 (1)	1.01788990 (17)
15	Transport Equipment	1.02220871 (14)	1.38234174 (13)	1.35230860 (8)
16	Scientific Instruments	1.00639977 (17)	1.12578433 (17)	1.11862530 (15)
17	Electric Light and Power	1.04822243 (10)	1.04822243 (18)	1.00000000 (18)
18	Misc. Industries and Construction	1.03571609 (12)	1.68295086 (7)	1.66485660 (5)

*Figures in parentheses indicate ranks.

TABLE 6
DIRECT AND INDIRECT OUTPUT MULTIPLIERS FOR HARYANA

S. No.	Sectors	D_F	I_F	I_0 or L.M.
1	Agriculture and Allied	1.07555746 (8)*	1.17412144 (15)	1.09164080 (16)
2	Sugar, Gur and Confectionery	1.00206021 (16)	1.90082021 (7)	1.89621210 (4)
3	Edible Oils	1.00705193 (13)	1.97802238 (4)	1.96417120 (3)
4	Animal Husbandry	1.03331542 (10)	1.40685875 (14)	1.36149980 (10)
5	Cotton Textiles	1.00221736 (15)	2.05065681 (1)	2.04611970 (1)
6	Other Textiles	1.78440573 (1)	2.03678897 (2)	1.14143820 (13)
7	Printing and Publishing	1.00000000 (18)	1.08258976 (18)	1.08258970 (17)
8	Leather and Rubber Products	1.02373375 (12)	1.64967511 (10)	1.61142970 (6)
9	Chemical Products	1.40441748 (3)	1.76204115 (8)	1.25464200 (12)
10	Basic Metal Industries	1.72456427 (2)	1.90553609 (6)	1.10493760 (15)
11	Metal Products	1.09459824 (6)	1.48689555 (13)	1.35839380 (11)
12	Electrical Machinery	1.02508664 (11)	1.60144873 (12)	1.56225690 (97)
13	Machinery except Electrical Machinery	1.32352920 (4)	1.96712044 (5)	1.48626890 (8)
14	Glass and Mineral Products	1.09891417 (5)	1.62130701 (11)	1.47537190 (9)
15	Transport Equipment	1.00001798 (17)	1.98581756 (3)	1.98578190 (2)
16	Scientific Instruments	1.0034771 (14)	1.13512304 (16)	1.13118970 (14)
17	Electric Light and Power	1.08439791 (7)	1.08664134 (17)	1.00206870 (18)
18	Misc. Industries and Construction	1.03371637 (9)	1.72482256 (9)	1.71733260 (5)

*Figures in parentheses indicate ranks.

TABLE 7
RASMUSSEN'S BACKWARD AND FORWARD LINKAGE INDICES FOR RAJASTHAN

Sector No.	Name of Sector	Backward Linkages		Forward Linkages	
		U_j	V_j	U_i	V_i
1	Agriculture and Allied	0.788082 (15)*	3.585304 (5)	2.409726 (2)	1.566254 (18)
2	Sugar, Gur and Confectionery	1.160302 (6)	2.735159 (14)	0.666496 (11)	4.187843 (5)
3	Edible Oils	1.296713 (3)	2.603283 (17)	0.624662 (15)	4.084728 (8)
4	Animal Husbandry	0.886585 (12)	3.134709 (7)	1.293619 (3)	2.071188 (16)
5	Cotton Textiles	1.182232 (4)	3.059667 (9)	0.893105 (5)	3.930756 (9)
6	Other Textiles	0.986381 (9)	2.888226 (10)	0.657560 (13)	4.233890 (3)
7	Printing and Publishing	0.657935 (16)	3.897873 (3)	0.608627 (18)	4.230825 (4)
8	Leather and Rubber Products	0.976323 (10)	2.850692 (11)	0.672408 (10)	4.156513 (6)
9	Chemical Products	0.863700 (13)	3.453048 (6)	1.013176 (4)	2.314326 (15)
10	Basic Metal Industries	1.466848 (1)	3.851476 (4)	3.501840 (1)	1.777673 (17)
11	Metal Products	1.170633 (5)	2.777225 (13)	0.778596 (7)	3.425527 (12)
12	Electrical Machinery	1.428060 (2)	2.592027 (18)	0.648792 (14)	4.146296 (7)
13	Machinery except Electrical Machinery	1.122114 (7)	2.684253 (16)	0.765415 (8)	3.398231 (13)
14	Glass and Mineral Products	0.655679 (17)	4.045260 (2)	0.703961 (9)	3.757761 (11)
15	Transport Equipment	0.846987 (14)	3.061003 (8)	0.611851 (17)	4.242641 (1)
16	Scientific Instruments	1.008369 (8)	2.734722 (15)	0.620829 (16)	4.238452 (2)
17	Electric Light and Power	0.616314 (18)	4.231585 (1)	0.871568 (6)	2.929571 (14)
18	Misc. Industries and Construction	0.894815 (11)	2.850629 (12)	0.657768 (12)	3.791009 (10)

*Figures in parentheses indicate ranks.

TABLE 8
RASMUSSEN'S BACKWARD AND FORWARD LINKAGE INDICES FOR PUNJAB

Sector No.	Name of sector	Backward Linkages		Forward Linkages	
		U_j	V_j	U_i	V_i
1	Agriculture and Allied	0.826875 (14)*	3.397597 (10)	2.431103 (1)	1.657224 (18)
2	Sugar, Gur and Confectionery	1.320504 (4)	2.687307 (15)	0.799400 (10)	3.954864 (7)
3	Edible Oils	1.357550 (3)	2.359759 (18)	0.691635 (12)	4.131809 (6)
4	Animal Husbandry	0.751579 (15)	3.499062 (7)	1.028616 (6)	2.534477 (16)
5	Cotton Textiles	1.368273 (2)	2.557509 (16)	0.801012 (9)	3.254587 (13)
6	Other Textiles	1.278725 (5)	3.455911 (9)	1.178845 (4)	3.760395 (11)
7	Printing and Publishing	0.719160 (16)	3.564751 (6)	0.608365 (18)	4.239816 (2)
8	Leather and Rubber Products	1.012602 (8)	3.370484 (5)	0.868464 (8)	3.951655 (8)
9	Chemical Products	0.869248 (12)	3.470704 (8)	1.114024 (5)	2.646571 (15)
10	Basic Metal Industries	0.933513 (10)	4.131412 (3)	2.043438 (2)	2.023863 (17)
11	Metal Products	0.970121 (9)	2.936538 (13)	0.684521 (13)	3.780904 (10)
12	Electrical Machinery	1.111601 (6)	2.696660 (14)	0.632175 (15)	4.221426 (3)
13	Machinery except Electrical Machinery	0.889516 (11)	3.119627 (12)	0.646564 (14)	4.202573 (4)
14	Glass and Mineral Products	1.412571 (1)	4.164071 (2)	1.508308 (3)	3.888211 (9)
15	Transport Equipment	0.838265 (13)	3.125223 (11)	0.757006 (11)	3.510169 (12)
16	Scientific Instruments	0.682686 (17)	3.771570 (4)	0.610475 (17)	4.241278 (1)
17	Electric Light and Power	0.635652 (18)	4.242642 (1)	0.987981 (7)	2.722849 (14)
18	Misc. Industries and Construction	1.020557 (7)	2.530995 (17)	0.628068 (16)	4.134986 (5)

*Figures in parentheses indicate ranks.

TABLE 9
RASMUSSEN'S BACKWARD AND FORWARD LINKAGE INDICES FOR HARYANA

Sector No.	Name of sector	Backward Linkages		Forward Linkages	
		U_j	V_j	U_i	V_i
1	Agriculture and Allied	0.715049 (15)*	3.878591 (3)	2.815465 (1)	1.378873 (18)
2	Sugar, Gur and Confectionery	1.157614 (7)	2.665556 (15)	0.631533 (14)	4.093641 (6)
3	Edible Oils	1.204630 (4)	2.507488 (18)	0.672765 (11)	3.852737 (9)
4	Animal Husbandry	0.856788 (14)	3.224012 (8)	0.879530 (7)	2.995108 (15)
5	Cotton Textiles	1.248865 (1)	2.753365 (12)	0.645609 (12)	3.998596 (7)
6	Other Textiles	1.240420 (2)	3.694538 (6)	1.202258 (4)	3.813284 (10)
7	Printing and Publishing	0.659305 (18)	3.902096 (2)	0.609007 (18)	4.242641 (1)
8	Leather and Rubber Products	1.004665 (10)	2.693972 (13)	0.745411 (9)	3.527674 (11)
9	Chemical Products	1.073096 (8)	3.381573 (7)	1.661598 (3)	2.164794 (17)
10	Basic Metal Industries	1.160486 (6)	3.824792 (4)	2.067988 (2)	2.175690 (16)
11	Metal Products	0.905531 (13)	3.204886 (9)	0.886979 (6)	3.152994 (13)
12	Electrical Machinery	0.975294 (12)	2.690360 (14)	0.636310 (13)	4.158067 (4)
13	Machinery except Electrical Machinery	1.197991 (5)	2.883726 (11)	1.113491 (5)	3.129196 (14)
14	Glass and Mineral Products	0.987388 (11)	2.909588 (10)	0.717205 (10)	3.943937 (8)
15	Transport Equipment	1.209378 (3)	2.259499 (16)	0.609270 (17)	4.240782 (3)
16	Scientific Instruments	0.691298 (16)	3.729398 (5)	0.611160 (16)	4.242383 (2)
17	Electric Light and Power	0.661773 (17)	4.233372 (1)	0.864880 (8)	3.183311 (12)
18	Misc. Industries and Construction	1.050430 (9)	2.562124 (17)	0.629541 (15)	4.115238 (5)

*Figures in parentheses indicate ranks.

similarities when compared to either that exist between Rajasthan and Punjab on one hand, and Rajasthan and Haryana on the other.

3. Rasmussen's Backward and Forward Linkage Method

The elements of the Leontief's inverse incorporate both direct and indirect connections between the sectors. Therefore, possibly more useful and comprehensive measures of the backward and forward linkages can be calculated by manipulating the $(I - A)^{-1}$ matrix. Indices of Sectoral linkages based on inverse matrix developed by Rasmussen have been given in a study of structural change. In this study an attempt has also been made to calculate the Rasmussen's indices for the economic sectors of the three states.

An index of backward linkage that Rasmussen calls the power of dispersion is defined as follows:

$$U_j = \frac{\frac{1}{n} \sum_{i=1}^{n} z_{ij}}{\frac{1}{n^2} \sum_{i=1}^{n} \sum_{j=1}^{n} z_{ij}} \quad (j = 1, 2, \ldots, n)$$

where Σz_{ji} is the sum of the column elements and is to be interpreted as the total inverse in the output from the whole system of industries needed to cope with an increase in the final demand of the product of industry by one unit. Similarly, an index of forward linkages is defined as

$$U_i = \frac{\frac{1}{n} \sum_{i=1}^{n} z_{ij}}{\frac{1}{n^2} \sum_{i=1}^{n} \sum_{j=1}^{n} z_{ij}} \quad (i = 1, 2, \ldots, n)$$

Since the above mentioned two indices do not tell the whole story as averages are sensitive to extreme values and may also give misleading results to overcome this difficulty a measures of variability represented by both of the following indices is the coefficients of variation form defined as

$$V_j = \frac{\sqrt{\frac{1}{n-1} \sum_{i=1}^{n} \left(z_{ij} - \frac{1}{n} \sum_{i=1}^{n} z_{ij} \right)^2}}{\frac{1}{n} \sum_{i=1}^{n} z_{ij}} \quad (j = 1, 2, \ldots, n)$$

and,

$$V_i = \frac{\sqrt{\frac{1}{n-1} \sum_{j=1}^{n} \left(z_{ij} - \frac{1}{n} \sum_{j=1}^{n} z_{ij} \right)^2}}{\frac{1}{n} \sum_{i=1}^{n} z_{ij}} \quad (i = 1, 2, \ldots, n)$$

A high V_j means that a particular industry draws unilaterally on the system of industries, and a low V_j means that an industry draws evenly from the other sectors.

The Vi can be interpreted in the same way.

The tables 7, 8 and 9 give a comparative view of the dominant sectors of each state according to the linkages from the average and the deviation form.

The simple backward linkages (U_j) for Rajasthan suggest that Basic Metal Industries (10) is the most dominant sector from the point of view of buying its raw materials from the other sectors. In Punjab, such a sector is Glass and Mineral Products (14), whereas in Haryana it is the Cotton Textiles Sector (5). This, however, points out the technological differences in the states. The common sectors for Rajasthan and Punjab having the same rankings are Edible Oils (3), Printing and Publishing (7) and Electric Light and Power (17).

The second Rasmussen's common backward linkage (V_j) reveals that the dominant sector in Rajasthan, Punjab, and Haryana's economies is Electric Light and Power (17). Similarity of sectors for Rajasthan and Punjab is seen only in Animal Husbandry (4), Metal Products (11), and Glass and Mineral Products (14). For Rajasthan and Haryana, this similarity can be noted in Basic Metal Industries (10). For Punjab and Haryana, the common sectors according to this linkage are Sugar, Gur and Confectionery (2), Edible Oils (3), Electrical Machinery (12), and Misc. Industries and Construction (18).

When we come to simple forward linkages (U_j) the common sector is only one, that is, Printing and Publishing (7). In taking Rajasthan and Haryana such sectors are Printing and Publishing (7), Transport Equipment (15) and Scientific Instruments (16).

For Punjab and Haryana the common sectors are Agriculture and Allied (1), Other Textiles (6), Printing and Publishing (7), and Basic Metal Industries (10). This corresponds to the similarity of structures between the two states.

Another forward linkage is V_i related to deviation form. According to this method for Rajasthan, the key sector is Transport equipment (15) for Punjab it is Scientific Instruments (16), while for Haryana it is Printing and Publishing (7). As in the above cases, taking first the relation between Rajasthan and Punjab, we find that the common sectors are, Agriculture and Allied (1), Animal Husbandry (4), Chemical Products (9), Basic Metal Industries (10), and Electric Light and Power (17). For Rajasthan and Haryana, the common sectors are, Agriculture and Allied (1) and Scientific Instruments (16). Similarly, for Punjab and Haryana, the basic sectors on the basis of ranking are Agriculture and Allied (1) and Misc. Industries and Construction (18).

The above four linkages have clearly demonstrated the similarity and differences in the technological structure of the states of Rajasthan, Punjab and Haryana.

4. A Measure of Structural Difference: Coefficient of Difference (MD)

The methodology used here is similar to the one developed by Hashim while examining the pattern of commodity flows between the various regions of our country.

In this study the magnitude of difference (M) in the flow pattern is given by the sum of absolute differences, which is calculated element by element from the two matrices. This is

$$M = \sum_{i=1}^{n} \sum_{j=1}^{n} (a_{ij} - b_{ij})$$

The value of M will be smaller if the differences are smaller and relatively larger if the differences are large. The situation of no difference between the two matrices would tend the value of M towards zero.

Now the coefficient of structural difference (MD) can be defined as:

$$MD = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} (a_{ij} - b_{ij})}{\sum_{i=1}^{n} \sum_{j=1}^{n} (a_{ij} + b_{ij})}$$

The value of MD will be between zero and unity i.e. $0 \leqslant MD \leqslant 1$. The further the MD moves from zero (a position of no change) and approaches unity (a situation of extreme difference) the higher it indicates the magnitude of difference between the two coefficient matrices and so between the two structures.

Coefficient of Difference Between Rajasthan and Punjab

Table 10 reveals that the sectors for which value of MD is more than 0.50 are Glass and Mineral Products (14), and Scientific Instruments (16). It, therefore, means that these sectors in Rajasthan and Punjab happen to be structurally different.

The value of MD is less than 0.50 for these two States in rest of the sixteen sectors. This reflects that the technology is more or less same in the two states for the industries concerned in these 16 sectors.

Coefficient of Difference Between Rajasthan and Haryana

The pattern of structural difference is the same as in the above case. Table 11 indicates that the sectors for which value of MD is more than 0.50, are Glass and Mineral Products (14), and Scientific instruments (16). The value of MD is lower than 0.50 in the other 16 sectors. This means that there is a structural difference between these sectors in Rajasthan and Haryana.

Coefficient of Difference Between Punjab and Haryana

An interesting fact is revealed in Table 12 that no sector was found for

TABLE 10

MEASURES OF STRUCTURAL DIFFERENCE (*MD*) FOR THE 18 SECTORS OF RAJASTHAN AND PUNJAB

Sector No.	Name of sector	Value of *MD*
1	Agriculture and Allied	0.124197
2	Sugar, Gur and Confectionery	0.043061
3	Edible Oils	0.080438
4	Animal Husbandry	0.432277
5	Cotton Textiles	0.198783
6	Other Textiles	0.100907
7	Printing and Publishing	0.185868
8	Leather and Rubber Products	0.003205
9	Chemical Products	0.012320
10	Basic Metal Industries	0.281725
11	Metal Products	0.032470
12	Electrical Machinery	0.066400
13	Machinery except Electrical	0.130563
14	Glass and Mineral Products	0.726076
15	Transport Equipment	0.047701
16	Scientific Instruments	0.621828
17	Electric Light and Power	0.041356
18	Misc. Industries and Construction	0.276757

Sectors for which value of $MD \leqslant 0.5$ — 1–13, 15, 17, 18
Sectors for which value of $MD \geqslant 0.5$ — 14, 16.

which the value of $MD \geqslant 0.50$.

For all the sectors i.e., from 1 to 18 the value of MD is $\leqslant 0.50$. This reflects that there is a structural similarity in all the economic sectors taken here for Punjab and Haryana.

Conclusions

The purpose of this study is, thus, two-fold to develop and discuss some procedures for using input-output tables to make inter-state comparisons and to use these procedures to compare the economic structure of

TABLE 11

MEASURES OF STRUCTURAL DIFFERENCE (*MD*) FOR THE 18 SECTORS OF RAJASTHAN AND HARYANA

Sector No.	Name of sector	Value of *MD*
1	Agriculture and Allied	0.241366
2	Sugar, Gur and Confectionery	0.025537
3	Edible Oils	0.073682
4	Animal Husbandry	0.061103
5	Cotton Textiles	0.187533
6	Other Textiles	0.098893
7	Printing and Publishing	0.291632
8	Leather and Rubber Products	0.016377
9	Chemical Products	0.227380
10	Basic Metal Industries	0.120766
11	Metal Products	0.210699
12	Electrical Machinery	0.276117
13	Machinery except Electrical	0.125908
14	Glass and Mineral Products	0.600213
15	Transport Equipment	0.412885
16	Scientific Instruments	0.642954
17	Electric Light and Power	0.301996
18	Misc. Industries and Construction	0.184744

Sectors for which value of $MD \leqslant 0.5$ — 1–13, 15, 17, 18.
Sectors for which value of $MD \geqslant 0.5$ — 14, 16.

Rajasthan, Punjab and Haryana, thereby suggesting possible causes of differences.

There is no one method available in the literature to suggest as to which is the best method for a comparative study on the regional level. So each method was taken and its results and limitations came in full perspective.

The first two measures of analysis—gross output as a share of total gross output and the output multipliers method have been studied as instruments of inter-state comparisons of economic structure in terms of output. It must be added here that the interpretations of gross output

TABLE 12

MEASURES OF STRUCTURAL DIFFERENCE (*MD*) FOR THE 18 SECTORS OF PUNJAB AND HARYANA

Sector No.	Name of sector	Value of *MD*
1	Agriculture and Allied	0.354923
2	Sugar, Gur and Confectionary	0.017544
3	Edible Oils	0.006796
4	Animal Husbandry	0.381243
5	Cotton Textiles	0.011686
6	Other Textiles	0.002034
7	Printing and Publishing	0.452948
8	Leather and Rubber Products	0.019581
9	Chemical Products	0.215664
10	Basic Metal Industries	0.166629
11	Metal Products	0.179457
12	Electrical Machinery	0.213634
13	Machinery except Electrical	0.252323
14	Glass and Mineral Products	0.223081
15	Transport Equipment	0.372520
16	Scientific Instruments	0.035199
17	Electric Light and Power	0.263936
18	Misc. Industries and Construction	0.096972

Sectors for which value of $MD \leqslant 0.5$ — 1–18.
Sectors for which value of $MD \geqslant 0.4$ — Nil.

share method, Chenery and Watanable's backward and forward linkages and simple Rasmussen's linkages are almost identical.

The method, coefficient of difference (*MD*) suggests that between Rajasthan and Punjab, structural difference is found only in glass and mineral products and Scientific instruments. A similar type of relation has been found in the case of Rajasthan and Haryana where the above sectors are similar. It is interesting to note that in so far as Punjab and Haryana are concerned no sector could be categorised for which value of $MD \geqslant 0.5$, which indicates that there is no structural difference between these states.

This study shows that Rajasthan's economy is heavily agro-based, followed by Haryana and Punjab. Analyses based on linkages suggest some differences.

Chenery & Watanabe's linkages suggest that since Haryana is the most developed, most of its sectors belong to the Final Manufacturing classification.

Coming to simple Rasmussen's backward and forward linkages represented by U_i and U_j, for Rajasthan, we can say that in final manufacturing and final primary production lie most of the sectors. The same holds true of Punjab. But in case of Haryana, contrary to the previous case, the majority of the sectors lie in final primary production.

A more developed and somewhat different tool has been provided by Rasmussen in the form of V_i and V_j linkages. The classification, intermediate primary production, applies to the majority of the sectors in case of Rajasthan and Haryana. In case of Punjab the important classification is that of intermediate manufacturing.

To sum up, we can say that the state of Haryana is the most developed among these three, followed by Punjab and Rajasthan.

Moreover, these instruments of comparison would appear to be valuable tools for comparison and refinements of present data and availability of future data will make the comparisons clearer and more meaningful.

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THE EXTERNAL DEBT OF DEVELOPING COUNTRIES AND PROSPECTS FOR ADJUSTMENT IN THE MID-1980s*

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Introduction

Now we find that the current account deficit of the non-oil LDCs has exceeded all projections for the last five years. The rate of growth of income of the LDCs as a group in 1980 was the lowest during the decade. The rising 'real' cost of inflation and the diminishing returns associated with investments in various factors of the world economy during the 1970s also made the capital formation more difficult. The LDCs' financial problems really began with the forced transfer of resources from them following two oil price increases along with persistent decline in their terms of trade. All the development and current accounts deficits and their financing have been reflected in the growth of external debts.

The total outstanding foreign debt of the LDCs in 1985 amounted to US $ 800 billion, according to the OECD reports; about $ 626 billion of this amount were medium and long-term debts. As compared to the level in 1973 ($ 118 billion), the amount of medium-term and long-term debts has increased more than five times within less than 10 years. While for the debt service payments of some countries, the figures are really staggering and recently the 'net' transfer of resources to LDCs as a group also declined sharply as a proportion of gross borrowings.

As late as 1970–71, the external financing for the LDCs was still largely provided through "non-debt creating" flows from official sources and long term capital investment from private sources. But since the four-fold rise in oil price in 1973, there has been complete chaos in the international capital markets. In bridging large current account deficits, the private markets made it possible for industrial countries to meet higher oil prices without longer recession than was feared generally.

The rise in the LDCs' deficits has been mainly due to upward shift in

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the real price of oil, sustained rise in the international rate of interest and the weakening of the LDCs' export prices now at their lowest points in real terms. The uncertainty in the international financial markets affected the economies of both the North and the South. The LDCs' gross capital market borrowing (bonds and medium-term euro-currency Credits) has not increased; in real terms, it has fallen. The return flow has risen sharply due to rising interest rates and shortening of repayment terms.

As Avramovic observed recently, "the apparent liquidity squeeze contains dangers for international credit system". Major international commercial banks which had made a decisive contribution to mid-income LDCs' maintenance of growth, following the successive oil crisis of 1973 and 1979, are now holding a large proportion of their total debt, of which $ 200 billion is at floating interest rates. It is this which has now turned out particularly costly, as each percentage increase in the rate means an extra $ 2 billion per year"[1].

Recent Trends in External Financial Flows

But the situation changed in the 1980s when world inflation and the recycling of unprecedented surplus of oil exporters boosted the international lending. Moreover the growth of external debt in both real and nominal terms out-stripped the growth rate of output and exports.

Now looking back, we find that reduction in capital flows and in the export earnings have combined with rising interest payments on foreign debt to produce a reduction in external purchasing power of the LDCs. One consequence has been the emergence of "negative" net financial transfers in many LDCs. Recent UNCTAD estimates reveal that for the non-oil dominant LDCs, an average positive 'net' transfer of about $ 50 billion in 1980–81 turned into a negative one of $ 14 billion by 1984 and this is expected to have doubled during 1986.

Financing these negative net transfers requires a sustained outflow of real resources through the forced generation of significant trade surpluses which had to be absorbed by the developed countries. As a result, the debt service payments in 1985 claimed 29 p.c. of the LDCs' export earnings, compared to 15 p.c. in the mid-1970s. But these trade surpluses have not been the outcome of gradual increase in export capacity and in domestic savings, but were produced through sharp reduction in imports as well as investment.

Table 1 below highlights these trends

During the period of recession since 1980–81, most of the LDCs have been under severe foreign exchange constraint, the major exception being

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[1] D Avramovic. "The Developing Countries after Cancun", *Journal of World Trade Law*, Jan. 1982, p. 4.

TABLE 1
NET MEDIUM AND LONG-TERM FINANCIAL FLOWS TO DEVELOPING COUNTRIES, 1978–85

(billions of current dollars)

	1978	1981	1982	1983	1984	1985[b]	Real average annual growth rate[c] (per cent)	
							1981–85	1978–81
Concessional	26.92	35.64	33.29	32.32	32.81	34.75	0.4	4.3
1. Official flows	25.27	33.62	30.98	29.98	30.21	31.65	−0.5	4.5
Bilateral	19.94	25.74	23.51	22.41	22.43	23.26	−1.5	3.4
OECD	12.09	17.33	17.52	17.21	18.50	19.80	4.4	7.1
Multilateral	5.33	7.88	7.47	7.57	7.78	8.39	2.6	8.3
2. Private grants	1.65	2.02	2.31	2.34	2.69	3.10	12.5	1.6
Non-Concessional								
1. Official flows	17.62	24.09	21.78	16.97	18.79	13.47	−12.8	5.5
Bilateral	14.52	18.39	15.18	9.77	10.59	5.67	−25.1	2.9
Official export credits	2.25	2.51	3.11	3.06	1.53	−0.31	—	−1.4
Official supported export credits	10.07	12.38	7.87	5.31	4.56	1.88	−37.1	1.9
Other official	2.20	3.50	4.20	1.40	4.50	4.00	4.4	10.9
Multilateral	3.10	5.70	6.60	7.20	8.20	7.90	9.5	16.5

2. *Private flows*	31.09	43.59	35.07	25.65	32.92	34.94	−4.6	6.4
Direct investment	10.96	16.59	12.10	9.24	10.27	7.80	−16.5	9.2
Capital markets of which	20.13	27.00	22.97	16.41	22.65	27.14	1.0	4.9
Bank lending[d]	16.03	25.70	21.37	15.71	23.25	22.54	−2.4	11.3
Bonds	4.10	1.30	1.60	0.70	−0.60	4.60	38.4	−35.1
Net flows	75.63	103.32	90.14	74.94	84.52	83.16	−4.4	5.5
Memo items:								
Short-term Bank credits[d]	19.60	24.60	18.00	−13.30	−6.80	−10.00	—	2.5
IMF purchases net	−0.77	6.38	6.53	12.09	5.14	0.70	−41.9	—

Source: UNCTAD secretariat estimates based on OECD Development Centre, 1986 Report: OECD *Geographical Distribution of Financial Flows to Developing Countries*, various issues: *IMF International Financial Statistics*, various issues; World Bank, *World Debt Tables*, 1985–86 edition.

[a] Excluding aid from CMEA countries since data from official sources are not available on a systematic basis but including aid from countries other than members of DAC and OPEC.

[b] Estimate

[c] Deflated by the DAC/GNP deflator.

[d] As a result of methodological changes in the recording of bank lending, data prior to 1984 and those for 1984–85 may not be fully comparable.

India and China, both of which pursued import substituting policies. It was reported recently that out of the UNCTAD sample of 61 LDCs, only eight experienced negative rates of export growth over 1976–78 period. This number rose to 11 during 1979–81 and to 34 during 1982–84.[2]

Now most of the LDCs at mid-income levels pay average annual rate of interest of 13 p.c. This is a blend of market rate plus the spread to reflect the country risk paid on loans to the banks. But the real rate is much higher as the LDCs' export prices have been falling. Hence, the proportion of exports absorbed by interest payments doubled to 24 p.c. between 1979 and 1982[3].

But the problem has been very serious for Latin America where the interest payments absorbed 42 p.c. of export earnings in 1983. Major repayments on medium and long-term debts were estimated as another 20 p.c. of export earnings after various refinancings arranged, making for a total debt service ratio of 62 p.c.[4] The cumulative negative net transfer of $ 85 billion was made in the period 1982–85 by seven major Latin American borrowers.

Moreover general foreign exchange shortages in the LDCs also induced the governments to adopt various measures like devaluation and import restrictions. In six major LDCs, Brazil, Mexico, Argentina, Republic of Korea, Venezuela and Philippines—the annual interest payments now account for 6 to 9 p.c. of GNP. Besides the interest, a significant portion of principal repayment is now due. Those due from 25 largest LDC debtors, many of them Latin American, are scheduled to increase from US $ 25 billion in 1984–85 to 85 billion in 1987.[5]

Thus, the situation of the LDCs is really a cause for worry, since the debt servicing problem of heavily indebted LDCs in Latin America and Africa is going to be with us during the 1980s.

The world environment has in many ways become hostile to the LDCs since the early 1980s. There was a fall in the relative prices of the several primary commodities. Also there was shrinkage in the export markets due to recession and rising protectionism in developed countries. From among the non-oil LDCs, it is the low-income countries which had the largest deficit relative to their exports.

While the debt servicing record of the LDCs upto recently has been good, on the whole, various strains have been developing simultaneously in the third world with an increasing number of LDCs in arrears in the external payments. The situation has further deteriorated during 1982–87 period. Really very little room is left now for further deflationary pressure in the LDCs.

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[2] UNCTAD, *Trade and Development Report*, 1985, UN, NY, 1985.

[3] Bank for International Settlements, *Annual Report*, Basle, June 1983, p. 124.

[4] P. Kuczynski, The Latin American Debt Act Two, *Foreign Affairs*, 1983, p. 19.

[5] International Monetary Fund, *World Economic Outlook*, 1984, p. 70.

Recent Trends in International Financial Flows

The UNCTAD estimates show that the 'negative' growth in GDP and investment rates was recorded in 62 p.c. of LDCs, whose imports fell during 1979–82 period. Moreover during 1982–83, this ratio had risen to 83 p.c. More revealing is the fact that the relationship between growth and export growth seems to have been reversed during 1982–83.[6]

Since 1982–83, there has been serious concern about the ability of some of the LDCs to meet their external commitments. This might give rise to a liquidity crisis in these countries. The net bank lending which increased from $ 26 billion in 1978 to over $ 50 billion in 1981 was cut back to $ 25 billion in 1982.

Hence various pressures on external finance have their counterpart in the liquidity crisis in the domestic economy of the LDCs. The current account deficit of non-oil LDCs is estimated to have increased more than threefold in real terms during 1970–80 period. The external flows to LDCs increased at the rate of 9 p.c. over this period (Table 2).

The present structure of the LDCs' debts reflects long-term relative decrease of the share of bilateral and multilateral public transfers (DDA), along with growth in the share of private transfers. While under 40 p.c. of entire debts of non-oil LDCs in 1973 were still public transfers, in 1983 this figure declined to 33 p.c.[7]

Along with the decline in public transfers, a shift took place from soft to hard forms of financing, as measured by the conditions that became very harsh for the LDCs. According to recent World Bank estimates, the average nominal interest rate charged on public credits for the LDCs with medium income almost doubled between 1970–71, while the terms of loans during the same period decreased from 16 to 12 years on the average.[8]

While the volume of flows from 1970 onwards is much larger, from 1983 onwards there has been significant growth in the proportion of capital provided through bank credits. Also most of the growth of private lending is through the Euro-currency markets—syndicated loans with floating interest rate.

Another important departure from earlier periods was that the OPEC countries tended to replace the developed countries as main net suppliers for rest of the world. While until the early 1970s, foreign direct investment was main source of finance for the LDCs, it grew very slowly during the 1970s and declined from about 20 p.c. in 1970 to 10 p.c. in 1980.

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[6] UNCTAD, *Trade and Development Report*, 1985, p. 92.
[7] International Monetary Fund, 1983, p. 200.
[8] World Bank, *World Development Report*, 1983, p. 206.

TABLE 2

OIL IMPORTING DEVELOPING COUNTRIES: FINANCING CURRENT DEFICITS, 1970–80

(US $ billion)

	Level	Current	Annual percentage growth (constant prices)
	1970	1980	1970–80
Current account balance	−8.6	−69.6	12.1
Financed by			
1. Net capital flows	9.1	55.3	9.0
(a) Total aid (grants and concessional loans)	3.1	16.3	7.5
(b) Medium and long-term borrowing	4.3	33.4	16.6
(i) Official export credit	0.5	2.6	7.2
(ii) Multilateral	0.5	3.2	9.4
(iii) Private	3.4	27.5	19.7
(c) Change in reserve and short-term borrowing	0.5	14.3	—

Source: World Bank, *World Development Report*, 1981.

Now the IMF played relatively small role in the financing of current account deficits. In the late 1970s net financial flows to LDCs were negative as the repayments exceeded gross loans. The IMF quotas as a percentage of LDCs' trade declined sharply in the late 1960s, thereby reducing the Fund capacity to provide balance of payment support. In the late 70s, the LDCs were not willing to borrow from the IMF under their high conditionality programme and there was ready access to private bank finance. Hence the ratio of external debt to gross domestic product in the LDCs rose from 22 to 39 p.c. between 1973 and 1982.

Since this access to foreign capital was not followed by any significant improvement in the export performance, the LDCs; overall debt/export ratio rose from 115 to 146 over the same period. But there were wide differences between individual groups of countries.

The IMF Financing for Non-Oil LDCs

Since August 1982 Mexican external financial crisis, new trends were observed that most of the private bank lending was reluctant. The share of private long-term capital flows in the financing of current account deficits declined significantly from the peak of 39 p.c. in 1978 to 27 p.c. in 1980.[9] One reason for this change in the attitude was that the size of external debt of Latin American countries was very large, when compared to their export earnings. Still several rescheduling packages recently organised for Mexico, Brazil and Argentina involved substantial rise in their lending to these countries. IMF asked the private banks to raise their exposure to Mexico during 1983 by 8 p.c. and to Brazil by 12 p.c. In several cases IMF also refused to agree to lend to a country until private banks committed themselves to make new loans.

The immediate reaction to the debt crisis of 1982–83 was significant growth of 'subsidized' public lending to the LDCs. The new role for the IMF in these package deals has been accompanied by increased lending to the LDCs since early 1980s. One factor has been the relatively greater availability of financial resources leading to an increase of Fund quotas from SDR 40 billion to SDR 60 billion. The most dramatic step was increase in the IMF quotas by 47.5 p.c. Hence the IMF lending adjusted for inflation is now four times larger than in 1970. The ratio of IMF lending to world exports is now more than 60 p.c. larger than it was in 1970 or 1980 (Table 3).

While the demand for IMF credit has been growing, under the policy of enlarged access approved in 1981, countries could borrow upto 450 p.c. of their quotas from the Fund to support high conditionality finance. One of the IMF condition is the adoption of proper adjustment policies. Moreover, for middle income LDCs, the Fund conditionality is crucial for commercial flows of finance.

There is some evidence that a positive correlation was observed between IMF support and inflow of Euro-currency credits. But in several other cases, a rather high failure rate of Fund programme led the banks to give more emphasis to their assessment of the borrower LDCs. The Fund also influence the adjustment policy as the availability of a large portion of Fund finance is conditional on the agreement of a programme of policies and attaining some specific targets[10].

Another criticism of the IMF adjustment policies is that they have negative effects on income distribution. The Fund emphasis on measures such as reduction of subsidies on food, dismantling of price controls and limits on wage increases tend to worsen distribution of real income.

Recent research also showed that the Fund programmes had little

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[9] IMF, *World Economic Outlook*, 1982.

[10] IMF, *World Economic Outlook*, 1986.

TABLE 3

IMF LENDING

SDR billion outstanding at the end of	1955	1960	1965	1970	1975	1980	1984
Special Drawing Rights (net cumulative allocations)	—	—	—	3.4	9.3	17.4	21.4
Buffer Stock facility	—	—	—	—	—	—	0.4
Compensatory Financing	—	—	0.1	0.1	0.7	2.8	7.5
Oil Facilities	—	—	—	—	4.8	1.9	—
Trust Fund Loans	—	—	—	—	—	1.3	2.8
Credit Tranche Drawings	0.1	0.4	2.9	2.9	1.8	2.6	14.1
Extended Facility Drawings	—	—	—	—	—	1.1	12.9
Undrawn Balances under Stand-by Arrangements	0.1	0.4	0.3	0.2	1.0	2.3	3.6
Extended Arrangements	—	—	—	—	0.1	3.9	3.0
Total IMF Lending							
—in SDRs	0.2	0.8	3.3	6.6	17.7	33.3	65.7
—in 1975 US $s	0.4	1.5	5.6	9.1	20.7	30.2	36.1
—relative to world exports	.0002	.007	.020	.023	.026	.023	.039

Sources: IMF, *International Financial Statistics*, Supplement to Fund Accounts Yearbook 1982, and February 1985 issue.

impact on growth and inflation and the major impact has been on improving the current account of balance of payments[11]. The option of avoiding Fund conditionality by borrowing from private capital markets only is no longer open, even to countries like Brazil, which could follow it in the 1970s. Here partly the answer may be in low degree of commitment by the LDCs to IMF policies.

Hence the current public transfers made by the multilateral financial institutions (World Bank Group, regional development banks) remained in the early 1980s at the level of 15 p.c. of all public transfers. Since then bilateral transfers have improved lending to further tightening of conditions of public financing. As for the multilateral official flows, several new measures were also implemented by the World Bank that may also help in sustaining private capital flows to the LDCs. Really the causes for the debt crisis have been rather external to the debtors and major contribution here was made by disinflationary monetary policy in the USA. Moreover, it is also true that several LDC debtors in Asia managed to avoid default.

A recent IMF study by Donovan[12] shows that among the non-oil LDCs with significant recourse to international markets, the rescheduling countries pursued far more imprudent economic policies than the countries which did not reschedule. In the five years prior to the debt crisis, the rescheduling countries had considerably higher consumer price inflation (23.8 p.c.) than the non-rescheduling countries (14.3 p.c.), considerably higher rates of monetary expansion and much higher rates of credit expansion to government (13.4 p.c.) than non-scheduling countries.

Moreover contrary to widespread opinion, the rescheduling countries experienced considerable improvement in their terms of trade during 5 years prior to the crisis (+13 p.c.), but non-rescheduling countries suffered a decline in terms of trade (—8.5).

Prospects for Adjustment

The changing world scenario has created new challenges to which the international financial system has to respond in order to avoid the collapse that may be there any time. In several respects, capital flows to the LDCs did not lead to corresponding acceleration in the price of domestic investment and growth. Indications are that the present flow of capital market lending to the LDCs may not show any improvement in the near future and there could be further decline in 'net' resource transfers. The report of the Task Force on concessional flows to the Development Committee unanimously suggested that the donor governments should redouble their efforts to increase the DDA, since the total DDA levels have been stag-

[11] See here T. Killick, *Adjustment in the Developing World*, IMF, 1982.

[12] See here Donal Donovan, "Nature and Origins of Debt Servicing Difficulties", *Finance and Development*, December 1984, pp. 22–25.

nant during 1980–86 period. As against the UN target of DDA as a proportion of GNP of 0.7 p.c. during this period, the ratio remained stagnant 0.36 p.c.

Recently Harold Lever argued that to pay the debts back, the borrowing countries would have to run trade surpluses against the lending countries on a scale which would cause problems in the West.[13] Really the debts now are too large in comparison with the size of the economies concerned. Moreover recent evidence does not show any willingness to continue rolling over the debts. The LDCs' projected capital needs can be met only if (1) aid from the DAC countries trebles at current prices over the 1980s, (2) the support from multilateral institutions is increased and (3) the share of poor countries in the bilateral aid from the developed countries goes up significantly.

In the near future, it seems that the debt-creating flows will continue to play an important role in the supply of new capital to the LDCs. Hence we make a strong case for enhancing IMF contributions to adjustment and finance in the LDCs. The LDCs also did not expect real interest rates to remain at high levels for such a long period. While the virtues of free markets and liberalization are underlined so vigorously, we should not forget that the current debt problem partly arose out of market failure for various reasons.

Hence the LDCs have incurred debts that they may never be able to repay. What is now urgently required is not a "safety net" for the lenders, but "new" facilities to help the low-income countries. A significant SDR allocation would have been of great help to the LDCs, but significant differences of views still remain about the supplementation of existing reserve assets.

The new lending to those debtor countries that commit themselves to policies consistent with the Baker Plan could be about $ 20 billion over next three years. The policies here underlined are more reliance on private sector and vigorous trade liberalization.

Hence a lasting solution to the debt problem should be sought in the reduction of international rates of interest. Also the case-by-case approach of supply and demand adjustment in the LDC debtors should be supplemented by an across-the-board approach consisting of interest rates, commodity prices and trade restrictions. Considerations should also be given to the idea of bringing some automaticity into aid flows through an international development tax or an extension of the Stabex Scheme to all the LDCs.

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[13] See H. Lever, "The Debt Threat", *The New York Review of Books*, 1984, p. 11.

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BOOK REVIEW

PREBISCH-SINGER HYPOTHESIS AND TERMS OF TRADE, PERIPHERAL CAPITALISM IN THE 1980's

By RAMESHWAR TANDON, Ashish Publishing House, New Delhi, 1986, pp. 330, Rs. 175.

Reviewed by P. ABDUL KAREEM, Institute for Social and Economic Change, Bangalore–72.

The Prebisch-Singer Theory of peripheral economy is the most important idea flowing from Latin America. Prebisch gave two ideas for his thesis: (i) the concept that 'spontaneous' industrialisation is not possible in an economy with surplus labour, (ii) the concept that the centre should lower its trade barriers and the periphery raise them against the centre, but lower them within the LDCs.

As first developed by Prebisch as also by Hans Singer in the early 1950s, the thesis of secular decline underlined the external bottleneck. The controversy arises from the nature of the hypothesis that was later linked to one of the most strongly felt issues in the North-South debates: the demands for a New International Economic Order. The LDCs have been pursuing for both stabilization and an enhancement of international prices of primary commodities through international commodity agreements and also by exploiting the commodity power of producers a la opec.

Three major elements of the Prebisch-Singer case are as follows: (i) the income elasticity of demand for imports from the periphery is low in the centre, but it is high in the periphery for imports from the centre, (ii) technical progress in the centre tends to reduce demands for exports from periphery, but technical progress in the periphery tends to occur in the export sector, (iii) the structure of product and factor markets is much more monopolistic in the centre than in the periphery. Hence, technical progress leads to a rise in income in the centre but in the periphery this leads to fall in relative prices of exportables.

The declining terms of trade are caused by different forces shaping international demand and supply and the result of this decline is found as an obstacle to growth. Prebisch also rejects the case that the periphery will worsen their position through industrialization. Really only a part of the Prebisch case in favour of protection depends on the assertion that the great industrial centres, not only keep for themselves the benefits of the use of new techniques in their economies, but are in a favourable

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position to retain a share of that deriving from technical progress of the periphery.

Rameshwar Tandon gives an exhaustive analysis of the evolution of Prebisch-Singer hypothesis. The 1949 thesis of Prebisch claimed that only external weakness of the periphery was caused by its trade structure; the 1963 general thesis held that both internal and external weaknesses of the periphery are due to anachronistic trade patterns.

Prebisch elaborates first what he claims in the classical school model—the 'strawman and then shows what really happened—a 'paper man'. There is not one single Prebisch thesis or model but many and it is by no means obvious that they are consistent with one another. In the *Economic development of Latin America*, (UN 1950) a series of price ratios are cited which are reciprocal of British terms of trade (Primary versus industrial goods prices in the period 1870–1947). It was observed that the trend of these ratios fell from a peak in the early 1880s to the 1940s. Hence the classical conclusions about effects of free trade are invalid. Prebisch went on to explain how the effects of increased productivity are transmitted. And then shows what would have happened had: (i) the prices both in the centre and the periphery fallen proportionately to productivity, (ii) had the incomes in the centres risen by an amount equal to increase in productivity.

In the later models Prebisch does not use the 'cyclical' approach on terms of trade; rather the "surplus manpower" of the periphery keeps wages down. In the 1959 version, role of trade unions and monopolies in the centre is not emphasised. But it is assumed that the incomes in the centre rise with increases in productivity. The role of trade unions in the centre is again pursued, but the secondary cause of deterioration, i.e., the retention of profits by monopolies in the centre, is not explained. From 1954 to 1964 Prebisch was more interested in the income elasticity of demand for its import rather than in the structure of the centre.

Hans Singer in the 1949 study for the UN *Relative Prices of Exports and Imports of the UDCs* found that for the latter part of 19th century to the eve of second world-war, there was secular downward trend in the prices of primary goods relative to prices of manufactured goods. Singer's concern was with the 'structural' differences between countries exporting manufactures and primary goods.

But in his 'Revisit' paper (*Journal of Development Studies*, 1974–75) Hans Singer feels that the essence of relationship lies in different types of 'countries'. To Singer, foreign investment and export sector could be 'enclaves' of the investing country, with almost no multiplier effects or spread effects upon rest of the economy. This is borne out by the experience of 1960s.

Hans Singer did not make any projections; he relied mainly on historical analysis. From 48–49, when projections were made upto 1973, there was a tendency towards further deterioration of terms of trade of primary goods exported by the LDCs.

As for the empirical evidence the author finds the hypothesis proved for pre-war period as well as the post-war period as a whole. Now we could say that the basic idea of Singer has been vindicated in terms of empirical analysis also. Recently Helliener referred to Prebisch-Singer analysis as representing another rich area for exploration.

There had been many criticisms against the Prebisch-Singer hypothesis. Ellsworth and Viner raised the issue of transport costs and improving quality of manufactured goods. Moreover Kindleberger and Meier explained that the British net barter terms of trade (NBTT) were not representative of the developed countries and so its inverse could not serve as a proxy for terms of trade for primary goods.

Recently Spraos raised the issue whether the implicit projections of declining trends in terms of trade for primary commodity exports have been borne out for the whole period 1950–1970. Spraos finds 'negative' trends for different series but finds them statistically 'insignificant' and there is no hint of any sign that terms of trade had improved (even excluding oil) (Trade and Development, UN, 1982).

Singer answers the criticisms in his recent work 'terms of trade and economic development' (*the New Palgrave, a Dictionary of Economics*, Mac, London, 1987). His point is that the doubts expressed about the post-war period will be clear when looked at the Employment Corrected double factoral terms of trade. The double factoral terms of trade very much considers 'relative' productivity and 'relative' prices, but the question arises whether it is correct to assume that the manufactured goods produced in the North are produced under full employment conditions.

Subsequent analysis by Spraos and Sapsford showed that corrections for shipping cost and changing quality would not destroy the empirical basis for the hypothesis. Sapsford recently determined the downward trend in the 'net' barter terms of trade over period 1900 to 1982 as 1.2 per cent per annum. Really the OPEC case has remained fairly isolated and it is by no means certain that market pressures will not in the end prevail again.

While the initial hypothesis was developed at a time when there were little export of manufactures from the LDCs, we also find a general shift in the terms of trade studies away from primary commodity versus manufactures and more towards exports of LDCs. Primary commodities or simple manufactures versus exports of industrial countries.

With a view to overcome the LDCs' dissatisfaction, various policies like price enhancement and diversification have been on the UN agenda for long. While price enhancement policy turns out to be inefficient, various UN resolutions also refer to 'just' prices. We find that the market prices for various primary goods of the LDCs do not coincide with competitive prices. But the competitive price suits the centre countries as they are significant 'net' importers of these items.

In the 'Revisit' paper, Hans Singer suggested that the essence of relationship lies in different types of countries. Now in the late 1980's Singer would see the solution, not in the industrialisation as such, but rather in building up indigenous scientific capacities within the LDCs. In the recent address to the UN, Raul Prebisch also held, "I maintain that a new nationalism must be sought but one based on dominant interests, one based not merely on economic and social objectives but on eminently ethical ones. It is not a question simply of a new international economic order, but a new internal, ethical and social economic order (*Trade and Developtment UNCTAD Review*, 1982).

THE WORLD IN DEBTS*

By JANEZ STANOVNIK; published by "Dnevnik", Novi Sad, 1985, pp. 90 (original in Serbo-Croatian: "Svet u dugovima").

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The greatest value of this book lies in the fact that it gives a systematic and easily understandable account of a problem that looms quite large in the contemporary international economic and political relations. Needless to say, this is a problem whose solution directly interests Yugoslavia.

The book is divided in six chapters. The first chapter describes the establishment and development of the International Monetary Fund (IMF). The second chapter considers the structural changes in the world economy that have placed this institution in a position to play the kind of role that it now plays. The crisis of indebtedness is the subject of the third chapter, which focuses primarily on the history of the problem of world indebtedness. In the chapter on debt rescheduling, the author explains the technical details of prolongation of debt repayment and notes the consequences that follow from this move. The fifth chapter is entitled "The Stipulated Restructuring of the World Economy" and it

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gives the author's view of the consequences of the solution adopted by the IMF. The sixth chapter presents the history and causes of Yugoslavia's external indebtedness and reviews the difficulties that it poses for the country's economy. The author also offers his own view of how the difficulties can be overcome, both in this country and in the whole world, contrasting his solution for the problem of world indebtedness with the policies and methodology advocated by the IMF.

Following a brief introduction stressing the importance of the problem on a world scale, the first chapter gives a comprehensive history of the creation of the International Monetary Fund—reasons for its establishment, negotiations leading to its establishment, the Fund's structure and organization, its Charter, mode of operation and running. The author does not fail to mention that the Fund was originally established to secure international economic stability and full employment, to ward against the danger of an economic crisis of the kind that the world had experienced in the thirties. Such stability was to rest on three institutional supports: the International Monetary Fund, the World Bank, and the World Trade Organization. According to this scheme, the IMF was to provide funds to countries experiencing balance-of-payments instabilities, so that deficits would not lead them to reduce imports, which would result in protectionism, contraction of international trade, and slackening of economic activity in the world. The World Bank was to provide funds for international private financing designed to stimulate world production and growth. The World Trade Organization was intended to secure free and multilateral trade. The original plan was to operate a stabilization scheme for raw material markets within this organization, which would make it possible for raw material exporting countries—developing countries which at that time were not yet very actively involved in international economic relations—to maintain their purchasing power and to act as an important factor of boom and prosperity in the world economy.

As is well known, the last mentioned organization is the only one of the three that has not been established, and therein lies one of the major reasons why the system has been unable to fulfil its function. The grave position of developing countries has led to a long-term instability in the world economy, accompanied by unemployment and contraction of world trade and production. It is a pity that the author did not feel it necessary to go more deeply into the reasons and consequences of the failure to establish this third institution. For it is precisely due to the absence of an organization that would, together with the IMF and the World Bank, stimulate structural changes in international economic relations (one of the preconditions for such changes being the institutional stabilization of commodity prices and export earnings of their main exporters from the developing countries) that we now have the crisis of indebtedness, in which the IMF plays the role that this book discusses. This seems to be a much more important task than analyzing the reasons for the polarization over the issue whether the IMF, in helping individual countries to stabilize their balance of payments, should have the right to interfere in their domestic economic policies. Though it is true that, for instance, Great Britain (whose delegation at the conference was led by one of the best known British economists of all time, J. M. Keynes) was opposed to granting greater authority to the IMF as advocated by the Americans, this fact was not very important at that time. The conference was attended mainly by representatives of the Western market economy countries, who should not mind too much that an organization with the same economic and political orientation should interfere in their domestic economic policies, all the more so as they needed this organization's help and as it had identical views to their regarding the totality of the economic policy.

It was only later, when the developing countries became actively involved in the world economy, trying in this way to realize the objectives of their national economic development, that the absence of the third organization proved crippling. And it was then that the IMF found itself in the role of—as the author puts it—a "nanny" watching over the correctness or otherwise of the national economic policies. Keynes was the only one (on the basis of his economic theory which advocated the stimulation of economic activity through increased consumption) who foresaw the future importance of developing countries' markets for the world economic prosperity, including the prosperity of the developed countries too. It is no wonder that economists at that time were unable to appreciate the importace of the markets in developing countries for the developed countries' national economies when one sees that most Western economists even today fail to realize the importance of these markets.

The main question, present at that time and now (but posed now in the critical circumstances afflicting the world economy), can be formulated in the following way: to what extent can the Western economies maintain an economic boom in the world, including their own countries, while remaining confined to their own markets and leaving all other markets in the position of economic outsiders condemned to live on the impulses coming from the developed countries' markets? If the answer is that the developed countries are capable of maintaining an economic boom over a long term, the solution for the crisis of indebtedness is clear: a high level of economic activity in the developed countries will increase the volume of world trade, boost production, reduce interest rates and unemployment—in short, it will create the necessary conditions for the lessening of the debt burden on a world scale. Add to this the fact that increased production in the developed countries will require greater imports from the developing countries, resulting in greater export earnings for the developing countries and easier servicing of their debts (repayment of interest and the principal sum), and it becomes clear that developing countries are more dependent on the Western markets than the other way round. They will therefore have to adjust their economic policies and solution for the debt problem to the conditions on these markets.

However, the author of this book does not accept this line of reasoning. He takes the view that only a radical change in the structure of the world economy and international economic relations can lead to a long-term stability in the world economy, which is the necessary precondition for the solution of the crisis. The author served for fifteen years as the Executive Secretary of the U.N. Economic Commission for Europe and was actively involved in the creation of UNCTAD, serving for a while as the personal adviser of the organization's First Secretary. He has published a series of studies on problems of international economic relations and has participated in many international meetings and conferences devoted to such problems. He has a rich file of data, whose systematic presentation for argumentation or illustration is the main value of this and his other books.

The author was in a position to get a very full view of the situation, and it comes as no surprise that the subsequent chapters of the book should offer a very clear and interesting overview of the situation in the world economy, especially following the emergence of the developing countries on the scene and recent structural changes in the world economy. One of the most important changes, according to the author, is the decline of productivity and a rise in manufacturing costs in the developed Western countries, resulting in a loss of competitive ability on their part on a world scale. However, these countries have made up for this loss by cementing such terms of trade in relation to other groups of countries which enable them to transfer increased production costs, especially labour costs (as the price they pay for the preservation of social peace within their borders), onto other groups of countries, particularly the developing countries. The growing indebtedness of developing countries and an increase in interest rates, which have made these countries net exporters of capital, are the best proofs of the correctness of this interpretation.

In the end, with all his knowledge and authority, the author is forced to admit that there is no ready-made solution for this problem, not even an outline plan, and that a broad debate is needed which will include not only academic economists but also monetary practitioners and politicians responsible for the design of economic policy. One thing is certain—and this is the message of this book—namely, that a solution cannot be found along the lines presently followed by the developed countries and the IMF. Thus, perhaps inevitably in the present situation, the book tells us more about what we should not do than about what we should do. This is the greatest, though as already said perhaps unavoidable, weakness of all the pleas for a change in international economic relations. For though there is sound scientific evidence that the world economic problems cannot be solved only with the recipes and prescriptions given by the developed countries and the IMF (that is, solely within the framework of the developed countries' markets), these countries have, up to this point, succeeded in maintaining a certain level of stability of the world economy and even achieving boom conditions from time to time. There is no serious evidence to suggest that the declining purchasing power of the developing countries has adversely affected the living standards and stability of the developed countries; equally, there are no signs that the world banking system might collapse unless the debt crisis is resolved—despite many dire warnings to that effect, which the present author could not resist either (cf. the introduction to the book). For the time being, in spite of occasional crises and misunderstandings, the developed countries are still firmly in control, and only when they no longer manage to control the situation will the conditions be ripe for the debt crisis to be solved along the lines suggested by the author and all those who advocate the transformation of international economic relations according to the principles of a New International Economic Order.

One of the book's valuable features is a chronology of Yugoslavia's growing foreign indebtedness, and particularly the chronology of the "revelation" of the size of the debt (for which it was even necessary to engage the services of a private foreign firm). In this chapter, too, the author confines himself to a statement and systematization of the already known facts. When referring to the causes of this phenomenon, he is careful to strike a balance between the subjective (that is, domestic) and objective (that is, external) causes. It is a pity that the book was written before the introduction of the new foreign exchange legislation, because it would have been interesting to get his evaluation of its possible contribution to the solution of Yugoslavia's debt crisis—this all the more so as he identified some earlier regulations in this domain as one of the domestic factors contributing to this situation.

The general conclusion is that this is an interesting, instructive and highly readable book, which, however, does not venture beyond the already known statements in talking about the chronology of the problem or beyond the standard proclamations in talking about the possibilities for its solution.

ASIAN DATA BANK

Set up in 1983 by the Society for Asian Development with the object of providing authentic and reliable data relating to the developing economies of Asia

ECONOMIES OF DEVELOPED AND DEVELOPING COUNTRIES: AN INTERNATIONAL COMPARISON

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TABLE 1
BASIC INDICATORS

Sl. No.	Countries	Population (millions) mid–1985	Area (thousands of square km)	GNP per capita		Average annual rate of inflation (per cent)		Life expectancy at birth (years) 1985
				Dollars 1985	Average annual growth rate 1965–85	1965–80	1980–85	
1	INDIA	765.1	3,288	270	1.7	7.4	7.8	56
A. *Developed Countries*								
2	Australia	15.8	7,687	10,830	2.0	8.8	9.1	78
3	Canada	25.4	9,976	13,680	2.4	7.4	6.3	76
4	France	55.2	547	9,540	2.8	8.0	9.5	78
5	Germany, F.R.	61.0	249	10,940	2.7	5.1	3.2	75
6	Italy	57.1	301	6,520	2.6	11.2	14.2	77
7	Japan	120.8	372	11,300	4.7	7.5	1.2	77
8	Norway	4.2	324	14,370	3.3	7.7	8.5	77
9	United Kingdom	56.5	245	8,460	1.6	11.2	6.4	75
10	U.S.A.	239.3	9,363	16,690	1.7	6.1	5.3	76
B. *Developing Countries—Asia*								
11	Bangladesh	100.6	144	150	0.4	14.9	11.5	51
12	China	1040.3	9,561	310	4.8	—	2.4	69
13	Hong Kong	5.4	1	6,230	6.1	8.1	7.9	76

14	Indonesia	162.2	1,919	530	4.8	34.3	10.7	55
15	Korea, Rep. of	41.1	98	2,150	6.6	18.7	6.0	69
16	Malaysia	15.6	330	2,000	4.4	4.9	3.1	68
17	Pakistan	96.2	804	380	2.6	10.2	8.1	51
18	Philippines	54.7	300	580	2.3	11.8	19.3	63
19	Singapore	2.6	1	7,420	7.6	4.8	3.1	73
20	Thailand	51.7	514	800	4.0	6.8	3.2	64
C. *Developing Countries—Latin America*								
21	Argentina	30.5	2,767	2,130	0.2	78.5	342.8	70
22	Brazil	135.6	8,512	1,640	4.3	31.6	147.7	65
23	Chile	12.1	757	1,430	−0.2	129.9	19.3	70
24	Colombia	28.4	1,139	1,320	2.9	17.5	22.5	65
25	Venezuela	17.3	912	3,080	0.5	8.7	9.2	70
D. *Developing Countries—Africa*								
26	Egypt, Arab Rep.	48.5	1,001	610	3.1	7.5	11.0	61
27	Ethiopia	42.3	1,222	110	0.2	3.3	2.6	45
28	Kenya	20.4	583	290	1.9	7.3	10.0	54
29	Nigeria	99.7	924	800	2.2	14.5	11.4	50
30	South Africa	32.4	1,221	2,110	1.1	9.9	13.0	55
31	Tanzania	22.2	945	290	—	9.6	19.6	52

Source: World Bank, *World Development Report*, 1987.

TABLE 2
GROWTH OF PRODUCTION

Sl. No.	Countries	Average annual growth rate (per cent)									
		GDP		Agriculture		Industry		(Manufacturing)ª		Services	
		1965–80	1980–85	1965–80	1980–85	1965–80	1980–85	1965–80	1980–85	1965–80	1980–85
1.	INDIA	3.8	5.2	2.8	2.7	4.1	5.4	4.4	5.6	4.8	7.5
A.	*Developed Countries*										
2.	Australia	4.2	2.5	2.6	3.9	2.9	1.0	1.2	−0.4	5.4	3.3
3.	Canada	4.8	2.4	1.6	0.5	4.0	−0.6	4.2	−0.2	5.4	2.7
4.	France	4.3	1.1	0.8	3.1	4.6	0.3	5.3	0.4	4.6	1.4
5.	Germany, F.R.	3.4	1.3	1.6	4.0	3.1	−0.5	3.4	−0.2	3.8	2.0
6.	Italy	3.8	0.8	0.9	0.5	4.2	−0.3	—	—	4.1	1.8
7.	Japan	6.3	3.8	0.8	1.6	8.5	5.9	9.4	7.8	5.2	1.6
8.	Norway	4.4	3.3	1.1	−1.3	5.0	2.4	2.8	−0.1	4.4	4.1
9.	Sweden	2.7	2.0	−0.2	3.1	2.2	2.8	2.3	2.9	3.3	1.4
10.	Switzerland	2.0	1.2	—	—	—	—	—	—	—	—
11.	United Kingdom	2.2	2.0	1.7	3.2*	1.2	0.6*	1.1	0.1*	2.9	2.1*
12.	U.S.A.	2.9	2.5	1.3	1.8	2.3	2.4	2.7	3.3	3.4	2.6
B.	*Developing Countries—Asia*										
13.	Bangladesh	2.4	3.6	1.5	2.8	3.8	4.7	6.8	2.0	3.4	4.3
14.	China	6.4	9.8	3.0	9.4	10.0	11.1	9.5	12.4	7.4	7.5
15.	Hong Kong	8.5	5.9	—	—	—	—	—	—	—	—
16.	Indonesia	7.9	3.5	4.3	3.1	11.9	1.0	12.0	6.4	7.3	6.3

17. *Korea, Rep. of*	9.5	7.9	3.0	6.3	16.6	9.6	18.8	9.0	9.4	6.7
18. *Malaysia*	7.3	5.5	—	3.0	—	6.7	—	6.1	—	5.9
19. *Pakistan*	5.2	6.0	3.3	2.1	6.2	8.8	5.3	10.1	6.1	6.8
20. Philippines	5.9	−0.5	4.6	1.7	8.0	−2.8	7.5	−1.2	5.2	0.1
21. Singapore	10.2	6.5	3.1	−1.8	12.2	5.9	13.3	2.1	9.7	6.9
22. Thailand	7.4	5.1	4.9	3.4	9.5	5.1	10.9	5.3	8.0	6.0
C. *Developing Countries—Latin America*										
23. Argentina	3.3	−1.4	1.4	2.8	3.3	−2.5	2.7	−1.6	3.9	−1.8
24. Brazil	9.0	1.3	4.7	.3.0	10.0	0.3	9.8	—	9.4	1.8
25. Chile	1.9	−1.1	1.6	2.1	0.8	−0.5	0.6	−1.9	2.7	−2.1
26. Colombia	5.6	1.9	4.3	1.8	5.5	2.9	6.2	—	6.4	1.6
27. Venezuela	5.2	−1.6	4.0	1.5	3.5	−1.8	5.9	1.4	6.6	−1.9
D. *Developing Countries—Africa*										
28. Egypt, Arab Rep.	6.7	5.2	2.8	1.9	7.0	7.0	—	—	9.5	−2.5
29. Ethiopia	2.8	0.3	1.2	−3.4	3.2	2.8	5.0	—	5.3	3.2
30. Kenya	6.4	3.1	4.9	2.8	9.8	2.0	10.5	3.8	6.4	3.9
31. Nigeria	7.9	−3.4	1.7	1.0	13.4	−5.8	14.6	3.0	8.8	−3.5
32. South Africa	4.0	0.8	—	—	—	—	—	—	—	—
33. Tanzania	3.9	0.8	1.7	0.7	4.2	−4.5	5.6	−4.6	6.7	2.8

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[a] Because manufacturing is generally the most dynamic part of industrial sector, its growth rate is shown separately.

*Figures are for years other than those specified.

Source: *World Bank*, *World Development Report*, 1987.

TABLE 3
STRUCTURE OF PRODUCTION

Sl. No.	Country	GDP (millions of dollars)		Distribution of gross domestic product (per cent)							
				Agriculture		Industry		(Manufacturing)ᵃ		Services	
		1965	1985	1965	1985	1965	1985	1965	1985	1965	1985
1.	INDIA	46,250	175,710	47	31	22	27	15	17	31	41
A. Developed Countries											
2.	Australia	22,140	162,490	11	4	40	33	28	17	48	63
3.	Canada	51,840	346,030	5	3	34	30*	23	16*	61	67*
4.	France	97,930	510,320	8	4*	39	34*	29	25*	52	62*
5.	Germany, F.R.	114,800	624,970	4	2*	53	40*	40	31*	43	58*
6.	Italy	62,600	358,670	11	5	41	39	—	—	48	56
7.	Japan	90,970	1,327,900	9	3	43	41	32	30	48	56
8.	Norway	7,080	57,910	8	4	33	43	21	14	59	54
9.	Sweden	21,670	100,250	6	3	40	31	28	21	53	66
10.	Switzerland	13,920	92,690	—	—	—	—	—	—	—	—
11.	United Kingdom	99,530	454,300	3	2*	41	36*	30	22*	56	62*
12.	U.S.A.	688,600	3,946,600	3	2	38	31	29	20	59	67
B. Developing Countries—Asia											
13.	Bangladesh	4,380	16,110	53	50	11	14	5	8	36	36
14.	China	65,590	265,530	39	33	38	47	30	37	23	20
15.	Hong Kong	2,150	30,730*	2	1*	40	31*	24	24*	58	68*

16. *Indonesia*	3,830	86,470	56	24	13	36	8	14	31	41
17. *Korea, Rep. of*	3,000	86,180	39	14	26	41	19	28	35	45
18. *Malaysia*	3,130	31,270	28	—	25	—	9	—	47	—
19. Pakistan	5,450	28,240	40	25	20	28	14	20	40	47
20. Philippines	6,010	32,590	26	27	28	32	20	25	46	41
21. Singapore	970	17,470	3	1	24	37	15	24	73	62
22. Thailand	4,050	38,240	35	17	23	30	14	20	42	53
C. Developing Countries—Latin America										
23. Argentina	16,500	65,920	17	—	42	—	33	—	42	—
24. Brazil	19,260	188,250*	19	13*	33	33*	26	—	48	54*
25. Chile	5,940	16,000	9	—	40	—	24	—	52	—
26. Colombia	5,570	34,400*	30	20*	25	30*	18	18*	46	50*
27. Venezuela	8,290	49,600	7	8	41	42	—	21	52	50
D. Developing Countries—Africa										
28. Egypt, Arab Rep.	4,550	30,550	29	20	27	31	—	—	44	49
29. Ethiopia	1,180	4,230	58	44	14	16	7	—	28	39
30. Kenya	920	5,020	35	31	18	20	11	13	47	49
31. Nigeria	4,190	75,300	53	36	19	32	7	9	29	32
32. South Africa	10,540	67,710*	10	5*	42	45*	23	23*	48	50*
33. Tanzania	790	5,600	46	58	14	8	8	5	40	33

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[a] Because manufacturing is generally the most dynamic part of industrial sector, its share of GDP is shown separately.

*Figures are for years other than those specified.

Source: World Bank, *World Development Report, 1987.*

TABLE 4
GROWTH OF CONSUMPTION AND INVESTMENT

Sl. No.	Countries	Average annual growth rate (per cent)					
		General government consumption		Private consumption		Gross domestic investment	
		1965–80	1980–85	1965–80	1980–85	1965–80	1980–85
1.	INDIA	6.3	10.7	3.1	4.4	4.8	4.6
A.	*Developed Countries*						
2.	Australia	5.4	3.8	4.1	2.8	2.4	0.8
3.	Canada	4.8	1.9	5.1	2.2	4.9	0.4
4.	France	3.5	1.7	4.7	1.8	3.7	−1.2
5.	Germany, F.R.	3.5	1.0	4.0	0.6	1.8	−0.8
6.	Italy	3.3	4.3	3.9	0.3	2.8	−2.3
7.	Japan	5.1	2.8	6.1	3.0	6.7	2.4
8.	Norway	4.7	3.0	4.5	3.4	2.7	2.9
9.	Sweden	4.0	1.5	2.5	0.5	1.1	0.5
10.	Switzerland	2.7	2.3	2.6	1.1	0.8	0.9
11.	United Kingdom	2.2	1.0	2.1	2.4	1.1	5.3
12.	U.S.A.	1.9	4.2	3.5	3.0	1.8	5.2
B.	*Developing Countries—Asia*						
13.	Bangladesh	N.A.	N.A.	2.7	3.7	0.0	0.5
14.	China	6.0	6.3	5.3	7.7	*10.5*	*16.5*
15.	Hong Kong	7.7	6.2	*9.0*	*6.6*	*8.6*	*−1.7*

16. Indonesia	11.4	5.2	6.3	5.9	16.1	5.6
17. Korea, Rep. of	6.7	3.4	7.9	5.5	16.5	9.6
18. Malaysia	8.5	3.6	6.0	3.8	10.4	5.3
19. Pakistan	4.7	10.5	5.5	5.1	2.4	6.1
20. Philippines	7.7	−0.6	4.5	2.3	8.5	−14.4
21. Singapore	10.1	9.4	7.8	4.3	13.9	7.4
22. Thailand	9.3	4.3	6.8	4.7	7.6	1.7
C. *Developing Countries—Latin America*						
23. Argentina	3.2	−3.0	2.7	−1.2	4.4	−13.8
24. Brazil	6.5	0.2	9.1	2.2	10.2	—5.5
25. Chile	4.0	−0.6	1.0	−2.2	0.5	−13.5
26. Colombia	6.7	1.4	5.9	2.6	5.8	0.6
27. Venezuela	7.4	—	8.5	—	8.5	—
D. *Developing Countries—Africa*						
28. Egypt, Arab Rep.	N.A.	8.5	5.7	3.0	11.5	0.7
29. Ethiopia	6.4	5.8	3.6	1.0	−0.6	1.6
30. Kenya	10.4	−0.3	5.3	2.2	7.1	−8.9
31. Nigeria	13.5	1.3	7.0	−1.5	14.7	−18.0
32. South Africa	5.7	—	4.3	—	4.2	—
33. Tanzania	N.A.	N.A.	4.6	1.9	6.2	−3.4

Source: World Bank, *World Development Report*, 1987.

TABLE 5
AGRICULTURE AND FOOD

Sl. No.	Countries	Value added in agriculture (millions of 1980 dollars)		Cereal imports (thousands of metric tons)		Food aid in cereals (thousands of metric tons)		Fertiliser consumption (hundreds of grams of plant nutrient per hectare of arable land)		Average index of production per capita (1979–81 =100)
		1970	1985	1974	1985	1974/75	1984/85	1970	1984	1983–85
1.	INDIA	46,456	61,710	5,261	9	1,582	304	114	394	120
A.	*Developed Countries*									
2.	Australia	7,009	10,377	2	25	—	—	246	262	110
3.	Canada	8,501	10,634*	1,513	692	—	—	192	484	110
4.	France	24,070	30,219*	654	1,216	—	—	2,424	3,115	107
5.	Germany, F.R.	14,859	19,040	7,164	6,482	—	—	4,208	4,211	110
6.	Italy	22,099	25,215	8,100	7,052	—	—	962	1,684	103
7.	Japan	39,216	41,435	19,557	26,720	—	—	3,849	4,365	106
8.	Norway	2,035	2,455	713	227	—	—	2,471	2,970	109
9.	Sweden	4,067	4,447	301	111	—	—	1,639	1,603	108
10.	Switzerland	—	—	1,485	926	—	—	3,842	4,296	108
11.	United Kingdom	7,907	11,476*	7,541	3,521	—	—	2,521	3,746	109
12.	U.S.A.	61,880	85,063*	460	992	—	—	800	1,041	100
B.	*Developing Countries—Asia*									
13.	Bangladesh	9,922	9,394	1,806	2,102	2,076	1,500	142	611	110
14.	China	69,147	139,482	9,840	10,394	0	262	418	1,806	125
15.	Hong Kong	—	—	657	861	0	—	0	0	108
16.	Indonesia	12,037	22,011	1,919	1,444	301	270	119	746	117

17. Korea, Rep. of	8,408	12,995	2,679	6,826	234	0	2,667	3,311	109
18. Malaysia	3,391	6,274	1,017	2,218	1	—	436	1,304	116
19. Pakistan	5,007	7,231	1,274	982	584	411	168	594	114
20. Philippines	5,115	9,104	817	1,524	89	68	214	319	103
21. Singapore	119	132	682	907	—	—	2,667	7,833	98
22. Thailand	5,631	10,132	97	174	0	4	76	250	119
C. *Developing Countries—Latin America*									
23. Argentina	3,254	4,452	—	1	—	—	24	37	106
24. Brazil	18,425	37,540	2,485	4,857	31	10	169	304	115
25. Chile	1,597	2,262	1,737	486	323	10	317	249	103
26. Colombia	8,248	7,106	503	1,021	28	4	310	558	103
27. Venezuela	2,477	3,620	1,270	2,793	—	—	165	411	101
D. *Developing Countries—Africa*									
28. Egypt, Arab Rep.	3,283	4,885	3,877	8,904	610	1,951	1,282	3,639	115
29. Ethiopia	1,663	1,511	118	986	54	869	4	35	97
30. Kenya	1,198	2,263	15	365	2	340	224	376	99
31. Nigeria	17,943	18,858	389	2,199	7	0	3	87	109
32. South Africa	3,571	—	127	821	—	—	425	644	88
33. Tanzania	1,834	2,088	431	231	148	127	30	44	108

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*Figures are for years other than those specified.

Source: World Bank, *World Development Report*, 1987.

TABLE 6
STRUCTURE OF MANUFACTURING

Sl. No.	Countries	Value added in manufacturing (millions of 1980 dollars)		Distribution of manufacturing value added (per cent, 1980 prices)									
				Food and agriculture		Textiles and clothing		Machinery and transport equipment		Chemicals		Others	
		1970	1984	1970	1984	1970	1984	1970	1984	1970	1984	1970	1984
1.	INDIA	16,281	30,035	11	12	37	26	14	19	8	11	30	32
A.	*Developed Countries*												
2.	Australia	21,725	25,026	19	19	7	8	23	19	5	8	46	46
3.	Canada	34,285	50,007	15	13	8	7	19	24	6	7	52	48
4.	France	119,708	175,519	16	17	10	7	29	35	10	9	36	32
5.	Germany, F.R.	215,818	265,225	10	10	8	5	37	41	8	9	38	34
6.	Italy	—	—	10	11	18	18	24	25	8	8	40	38
7.	Japan	157,344	412,667	12	9	8	5	27	41	6	6	47	38
8.	Norway	7,715	9,071	15	11	6	3	27	27	5	8	47	51
9.	Sweden	23,355	29,213	9	9	6	3	28	32	5	7	52	50
10.	Switzerland	—	—	12	15	9	8	26	24	8	12	45	40
11.	United Kingdom	130,154	124,809	11	13	8	7	34	33	7	11	39	36
12.	U.S.A.	439,097	651,315	9	9	7	6	30	35	7	9	46	41
B.	*Developing Countries—Asia*												
13.	Bangladesh	659	1,381	18	15	51	39	3	6	13	24	*15*	*16*
14.	China	46,484	143,822	—	—	—	—	—	—	—	—	—	—
15.	Hong Kong	—	—	4	—	*50*	—	*16*	—	*1*	—	*28*	—

16. *Indonesia*	2,723	13,165	18	20	7	7	5	7	7	6	62	60
17. *Korea, Rep. of*	4,239	26,650	13	9	16	17	9	29	16	11	46	35
18. Malaysia	1,681	6,770	27	18	4	6	16	28	4	4	49	42
19. Pakistan	2,359	5,624	19	28	57	23	7	10	7	21	11	18
20. Philippines	4,283	8,644	42	44	11	14	9	8	6	7	32	28
21. Singapore	1,174	3,854	8	3	8	4	20	52	3	6	61	35
22. Thailand	2,526	8,325	32	23	21	—	6	12	6	8	36	56
C. *Developing Countries—Latin America*												
23. Argentina	10,192	11,044	22	24	13	9	17	15	8	12	39	40
24. Brazil	26,963	56,368*	21	19	15	10	16	18	4	11	44	41
25. Chile	5,275	16,427	23	27	17	10	6	3	7	8	48	52
26. Colombia	3,297	6,787	37	45	18	13	5	5	6	8	34	29
27. Venezuela	5,790	8,981	22	28*	10	6*	6	6*	8	6*	55	54*
D. *Developing Countries—Africa*												
28. Egypt, Arab Rep.	—	—	22	24*	35	29*	5	13*	7	8*	32	26*
29. Ethiopia	282	453*	30	38*	34	28*	1	—	2	2*	33	32*
30. Kenya	263	919	39	38	10	11	11	13	10	8	29	29
31. Nigeria	2,012	8,039	32	30*	11	9*	10	20*	9	14*	39	27*
32. South Africa	9,747	—	12	14	9	8	26	20	7	9	46	50
33. Tanzania	353	407	23	26*	27	26*	7	9*	9	9*	34	31*

*Figures are for years other than those specified.
Source: World Bank, *World Development Report, 1987*.

TABLE 7
COMMERCIAL ENERGY

Sl. No.	Countries	Average annual energy growth rate (per cent)				Energy consumption per capita (kilograms of oil equivalent)		Energy imports as a percentage of merchandise exports	
		Energy production		Energy consumption					
		1965–80	1980–85	1965–80	1980–85	1965	1985	1965	1985
1.	INDIA	5.5	9.6	5.8	6.4	100	201	8	30*
A.	*Developed Countries*								
2.	Australia	10.5	5.9	5.1	0.9	3,287	5,116	10	7
3.	Canada	5.7	3.4	4.6	0.4	6,007	9,224	7	5
4.	France	−0.9	9.8	3.7	−0.4	2,468	3,673	16	25
5.	Germany, F.R.	−0.1	0.9	2.9	−0.1	3,197	4,451	8	17
6.	Italy	1.3	1.5	3.7	0.4	1,568	2,606	16	30
7.	Japan	−0.4	5.0	6.0	1.4	1,474	3,116	19	32
8.	Norway	12.4	5.9	4.1	2.8	4,650	8,920	18	7
9.	Sweden	4.9	8.6	2.6	2.2	4,162	6,482	12	18
10.	Switzerland	3.7	1.8	3.1	1.7	2,501	3,952	8	11
11.	United Kingdom	3.6	2.6	0.8	—	3,481	3,603	13	14
12.	U.S.A.	1.1	0.2	2.3	−0.4	6,535	7,278	8	26
B.	*Developing Countries—Asia*								
13.	Bangladesh	—	18.8	—	7.6	—	43	—	41
14.	China	10.0	6.2	9.8	5.7	178	515	—	—
15.	Hong Kong	—	—	8.4	6.6	*424*	*1,264*	*4*	*5*

16.	Indonesia	9.9	0.2	8.4	4.4	91	219	3	12*
17.	Korea, Rep. of	4.1	9.3	12.1	5.0	237	1,214	18	24
18.	Malaysia	36.9	21.0	6.9	7.7	312	826	10	9
19.	Pakistan	6.5	8.8	3.3	9.4	136	218	7	52
20.	Philippines	9.0	19.6	6.0	1.8	160	255	12	44*
21.	Singapore	—	—	11.3	−1.1	670	2,165	17	34
22.	Thailand	9.0	56.1	10.5	6.6	80	343	11	33*
C. *Developing Countries—Latin America*									
23.	Argentina	4.5	3.6	4.3	2.2	975	1,468	8	6*
24.	Brazil	8.6	12.6	10.0	3.2	286	781	14	37*
25.	Chile	1.8	3.0	3.1	−1.2	657	726	5	16*
26.	Colombia	1.0	5.4	6.1	2.4	413	755	1	14*
27.	Venezuela	−3.1	−3.6	4.7	1.7	2,319	2,409	—	1
D. *Developing Countries—Africa*									
28.	Egypt, Arab Rep.	10.7	9.3	6.2	7.9	313	588	11	10
29.	Ethiopia	7.5	5.5	4.1	−1.8	10	17	8	43
30.	Kenya	13.1	12.2	5.0	−5.7	114	103	—	—
31.	Nigeria	17.3	−4.6	12.9	9.0	34	165	7	3*
32.	South Africa	5.1	3.3	4.4	0.8	1,702	2,184	10	1*
33.	Tanzania	7.3	2.9	3.7	2.8	37	39	—	—

*Figures are for years other than those specified.

Source: World Bank, *World Development Report, 1987*.

TABLE 8
GROWTH OF MERCHANDISE TRADE

Sl. No.	Countries	Merchandise trade (millions of dollars)		Average annual growth rate (per cent)				Terms of trade (1980 = 100)	
				Exports		Imports			
		Exports 1985	Imports 1985	1965–80	1980–85	1965–80	1980–85	1983	1985
1.	INDIA	10,260	14,608	3.7	4.6	1.6	2.2	111	115
A.	*Developed Countries*								
2.	Australia	22,760	25,890	6.1	5.7	2.1	4.2	97	90
3.	Canada	87,502	81,477	6.0	8.8	7.0	5.4	97	92
4.	France	97,457	107,588	8.9	2.2	8.9	1.1	99	103
5.	Germany, F.R.	25,684	25,268	7.9	4.6	7.2	2.6	99	98
6.	Italy	78,943	91,123	8.1	4.7	6.3	3.2	98	97
7.	Japan	175,858	130,488	11.5	7.3	8.7	2.4	106	113
8.	Norway	19,853	15,556	7.2	5.8	5.5	4.2	109	115
9.	Sweden	30,403	28,538	5.0	6.4	4.5	3.8	100	104
10.	Switzerland	27,281	30,626	5.9	3.5	5.4	3.6	112	107
11.	United Kingdom	101,096	109,110	5.5	2.6	4.2	4.3	100	100
12.	U.S.A.	213,144	361,627	6.7	−2.8	6.6	8.4	112	114
B.	*Developing Countries—Asia*								
13.	Bangladesh	999	2,772	—	7.1	—	3.1	102	113
14.	China	27,327	42,526	5.5	8.8	8.0	17.6	100	100
15.	Hong Kong	30,184	29,705	9.5	9.4	8.3	7.7	109	110

16. *Indonesia*	18,590	12,069	9.7	1.1	13.0	4.9	97	97
17. *Korea, Rep. pf*	30,283	31,129	27.3	13.0	15.2	9.8	101	105
18. Malaysia	15,282	12,302	4.4	10.7	2.2	6.4	88	85
19. Pakistan	2,740	5,890	4.3*	2.4	0.5	3.9	96	95
20. Philippines	4,629	5,459	4.7	−2.1	2.9	−5.9	99	96
21. Singapore	22,812	26,285	4.8	5.9	7.0	4.2	101	101
22. Thailand	7,100	9,231	8.5	8.4	4.1	2.8	84	77
C. *Developing Countries—Latin America*								
23. Argentina	8,396	3,814	4.7	3.2	1.8	−17.2	96	88
24. Brazil	25,637	14,346	9.4	6.6	8.3	−9.1	87	87
25. Chile	3,743	2,743	7.9	2.3	1.5	−12.5	84	79
26. Colombia	3,696	4,113	1.5	1.6	5.3	−1.4	92	97
27. Venezuela	12,272	8,178	−9.4	−5.8	8.7	−9.1	96	94
D. *Developing Countries—Africa*								
28. Egypt, Arab Rep.	4,150	11,200	2.0	3.9	6.0	8.0	99	93
29. Ethiopia	338	989	−0.5	−0.8	−0.9	6.8	92	100
30. Kenya	976	1,436	—	−3.9	1.7	−9.0	94	94
31. Nigeria	12,567	8,877	11.5	−9.9	15.1	−11.5	97	95
32. South Africa	16,523	11,469	7.9	−3.0	0.1	−8.8	86	85
33. Tanzania	255	1,017	−4.0	−11.1	1.6	−3.9	91	90

*Figures are for years other than those specified.
Source: World Bank, *World Development Report, 1987*.

TABLE 9
STRUCTURE OF MERCHANDISE EXPORTS

Sl. No.	Countries	Percentage share of merchandise exports									
		Fuels, minerals and metals		Other primary commodities		Machinery and transport equipment		Other manufactures		(Textiles and clothings)[a]	
		1965	1985	1965	1985	1965	1985	1965	1985	1965	1985
1.	INDIA	10	25	41	26*	1	4*	48	45*	36	18*
A.	*Developed Countries*										
2.	Australia	13	44	73	36	5	5	10	15	1	1
3.	Canada	28	22	35	17	15	40	22	21	1	1
4.	France	8	7	21	19	26	34	45	41	10	5
5.	Germany, F.R.	7	5	5	7	46	47	42	41	5	5
6.	Italy	8	6	14	9	30	32	47	53	15	13
7.	Japan	2	1	7	1	31	62	60	36	17	3
8.	Norway	21	62	28	7	17	14	34	16	2	1
9.	Sweden	9	9	23	11	35	42	33	38	2	2
10.	Switzerland	3	3	7	4	30	33	60	59	10	6
11.	United Kingdom	7	24	10	8	41	32	41	35	7	4
12.	U.S.A.	8	8	27	17	37	48	28	27	3	2
B.	*Developing Countries—Asia*										
13.	Bangladesh	—	3	—	32	—	—	—	65	—	55
14.	China	—	25*	—	21*	—	6*	—	48*	—	24*
15.	Hong Kong	2	2	11	6	6	24	81	68	43	32
16.	Indonesia	43	75*	53	14*	3	1*	1	10*	—	2*

17. Korea, Rep. of	15	4	25	5	3	36	56	55	27	23
18. Malaysia	35	34*	59	39*	2	19*	4	8*	—	3*
19. Pakistan	2	2	62	35	1	2	35	61	29	45
20. Philippines	11	13*	84	36*	—	5*	6	46*	1	7*
21. Singapore	21	29	44	12	10	32	24	26	6	4
22. Thailand	11	5*	84	60*	—	7*	4	28*	—	13*
C. *Developing Countries—Latin America*										
23. Argentina	1	5*	93	77*	1	5*	5	13*	—	1*
24. Brazil	9	15*	83	44*	2	14*	7	27*	1	3*
25. Chile	89	64*	7	29*	1	1*	4	6*	—	—
26. Colombia	18	15*	75	67*	—	1*	6	17*	2	3*
27. Venezuela	97	94*	1	1*	—	—	2	5*	—	—
D. *Developing Countries—Africa*										
28. Egypt, Arab Rep.	8	72	71	18	—	—	20	10	15	8
29. Ethiopia	—	10	100	89	0	—	—	1	—	—
30. Kenya	13	22*	77	65*	—	2*	10	11*	—	—
31. Nigeria	32	96*	65	3*	0	—	2	—	—	—
32. South Africa	24	39*	44	20*	3	2*	29	39*	1	2*
33. Tanzania	1	17*	86	76*	0	—	13	7*	—	4*

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[a] Textiles and clothings in a subgroup of other manufactures.

*Figures are for years other than those specified.

Source: World Bank: *World Development Report*, 1987.

TABLE 10
STRUCTURE OF MERCHANDISE IMPORTS

Sl. No.	Countries	Percentage share of merchandise imports									
		Food		Fuels		Other primary commodities		Machinery and transport equipment		Other manufactures	
		1965	1985	1965	1985	1965	1985	1965	1985	1965	1985
1.	INDIA	22	13*	5	21*	14	16*	37	25*	22	34*
A.	*Developed Countries*										
2.	Australia	5	5	8	7	10	4	37	42	41	42
3.	Canada	10	6	7	6	9	5	40	56	34	28
4.	France	19	10	15	22	18	8	20	25	27	35
5.	Germany, F.R.	22	12	8	20	21	9	13	23	35	37
6.	Italy	24	14	16	27	24	12	15	21	21	27
7.	Japan	22	14	20	44	38	16	9	9	11	18
8.	Norway	10	6	7	9	12	7	38	38	32	40
9.	Sweden	12	6	11	19	12	7	30	33	36	35
10.	Switzerland	16	8	6	10	11	6	24	26	43	50
11.	United Kingdom	30	11	11	13	25	8	11	32	23	36
12.	U.S.A.	19	7	10	16	20	5	14	38	36	35
B.	*Developing Countries—Asia*										
13.	Bangladesh	—	24	—	17	—	8	—	18	—	33
14.	China	—	10*	—	—	—	13*	—	27*	—	50*
15.	Hong Kong	25	10	3	5	13	7	13	24	46	55
16.	Indonesia	6	6*	3	20*	2	7*	39	36*	50	31*

17. Korea, Rep. of	15	6	7	24	26	13	13	34	38	23
18. Malaysia	25	11*	12	10*	10	5*	22	46*	32	28*
19. Pakistan	20	19	3	24	5	6	38	27	34	24
20. Philippines	20	8*	10	27*	7	5*	33	21*	30	39*
21. Singapore	23	9	13	29	19	5	14	31	30	26
22. Thailand	6	5*	9	23*	6	8*	31	29*	51	41*
C. *Developing Countries—Latin America*										
23. Argentina	6	4*	10	10*	21	11*	25	32*	38	43*
24. Brazil	20	9*	27	53*	9	5*	22	15*	28	17*
25. Chile	20	18*	6	21*	10	5*	35	22*	30	33*
26. Colombia	8	10*	1	11*	10	7*	45	35*	35	37*
27. Venezuela	12	19*	1	1*	5	6*	44	43*	39	31*
D. *Developing Countries—Africa*										
28. Egypt, Arab Rep.	26	25	7	4	12	10	23	25	31	36
29. Ethiopia	6	29	6	15	6	4	37	29	44	23
30. Kenya	—	9*	—	36*	—	4*	—	23*	—	28*
31. Nigeria	9	21*	6	5*	3	3*	34	35*	48	37*
32. South Africaª	5	6*	5	1*	11	5*	42	55*	37	34*
33. Tanzania	—	—	—	—	—	—	—	—	—	—

*Figures are for years other than those specified.
ªFigures are for South African Customs Union.
Source: World Bank, *World Development Report, 1987*.

TABLE 11
ORIGIN AND DESTINATION OF MERCHANDISE EXPORTS

Sl. No.	Countries	Destination of merchandise exports (percentage of total)							
		Industrial market economies		Nonreporting nonmember economies		High-income oil exporters		Developing economies[a]	
		1965	1985	1965	1985	1965	1985	1965	1985
1.	INDIA	58	57*	15	17*	2	6*	25	20*
A.	*Developed Countries*								
2.	Australia	69	51	4	3	1	3	27	42
3.	Canada	87	89	4	2	—	—	10	9
4.	France	68	71	2	3	—	2	29	24
5.	Germany, F.R.	77	78	2	3	1	2	21	18
6.	Italy	71	70	3	3	2	5	25	22
7.	Japan	49	58	3	2	2	4	47	36
8.	Norway	82	88	3	1	—	—	14	11
9.	Sweden	85	83	3	2	—	2	12	13
10.	Switzerland	76	75	2	2	1	4	21	20
11.	United Kingdom	63	77	2	1	1	4	33	18
12.	U.S.A.	61	60	—	1	1	3	38	36
B.	*Developing Countries—Asia*								
13.	Bangladesh	—	48	—	4	—	2	—	46
14.	China	—	41*	—	5*	—	1*	—	53*
15.	Hong Kong	67	54	—	—	1	2	32	43
16.	Indonesia	72	76	4	—	—	—	24	24

17. Korea, Rep. of	75	69	—	—	—	6	25	25
18. Malaysia	56	52*	6	2*	—	2*	37	45*
19. Pakistan	48	49	4	5	3	13	46	32
20. Philippines	95	78*	—	2*	—	1*	5	18*
21. Singapore	28	47	5	1	2	4	65	48
22. Thailand	44	56*	—	1*	2	4*	54	39*
C. *Developing Countries—Latin America*								
23. Argentina	67	43*	7	19*	—	—	27	38*
24. Brazil	77	62*	4	5*	—	2*	19	31*
25. Chile	90	74*	—	1*	—	2*	10	23*
26. Colombia	86	81*	1	1*	—	—	13	18*
27. Venezuela	63	75*	—	—	—	—	38	25*
D. *Developing Countries—Africa*								
28. Egypt, Arab Rep.	28	53*	38	7*	1	2*	37	37*
29. Ethiopia	78	71	3	8	6	4	14	17
30. Kenya	69	51*	1	1*	1	1*	29	48*
31. Nigeria	91	89*	1	—	—	—	7	11*
32. South Africa[b]	96	84*	—	—	—	1*	4	15*
33. Tanzania	66	63*	—	4*	1	1*	33	32*

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*Figures are for years other than those specified.

[a] Includes unallocable data.

[b] Figures are for the South African Customs Union.

Source: World Bank, *World Development Report, 1987.*

TABLE 12
ORIGIN AND DESTINATION OF MANUFACTURED EXPORTS

Sl. No.	Countries	Manufactured exports (millions of dollars)		Destination of manufactured exports (percentage to total)							
				Industrial market economies		Non-reporting nonmember economies		High-income oil exporters		Developing economies[a]	
		1965	1985	1965	1985	1965	1985	1965	1985	1965	1985
1.	INDIA	828	5,890*	55	59*	11	10*	2	7*	32	24*
A. *Developed Countries*											
2.	Australia	432	4,548	57	43	—	—	—	1	43	56
3.	Canada	2,973	51,523	88	94	—	—	—	—	12	5
4.	France	7,139	72,242	64	69	2	2	1	3	33	26
5.	Germany, F.R.	15,764	161,304	76	77	2	3	1	2	22	18
6.	Italy	5,587	67,292	68	70	3	3	2	5	27	21
7.	Japan	7,704	171,144	47	58	3	2	2	4	49	36
8.	Norway	734	5,618	78	70	2	1	—	1	20	28
9.	Sweden	2,685	24,457	82	83	3	2	—	2	15	14
10.	Switzerland	2,646	25,230	75	74	2	2	1	4	22	20
11.	United Kingdom	11,346	68,392	61	71	2	1	1	5	36	24
12.	U.S.A.	17,833	158,517	58	61	—	—	1	3	40	35
B. *Developing Countries—Asia*											
13.	Bangladesh	—	645	—	53	—	3	—	—	—	43
14.	China	—	13,380*	—	32*	—	3*	—	2*	—	63*
15.	Hong Kong	995	27,540	71	56	—	—	1	2	28	41
16.	Indonesia	27	2,365*	25	50*	2	—	—	4*	73	46*

17. Korea, Rep. of	104	27,669	68	68	—	—	—	6	32	26
18. Malaysia	75	4,404*	17	69*	—	—	2	2*	81	29*
19. Pakistan	190	1,731	40	59	7	5	2	12	52	24
20. Philippines	43	2,534*	93	77*	—	—	—	2*	7	21*
21. Singapore	338	13,317	9	52	—	1	3	4	88	42
22. Thailand	30	2,583*	39	63*	—	—	—	6*	61	31*
C. Developing Countries—Latin America										
23. Argentina	84	1,423*	45	45*	1	5*	—	—	54	50*
24. Brazil	134	8,911*	40	52*	1	1*	—	3*	59	43*
25. Chile	28	255*	38	35*	—	—	—	—	62	65*
26. Colombia	35	611*	43	58*	—	—	—	—	57	41*
27. Venezuela	51	647*	59	66*	—	—	—	—	41	34*
D. Developing Countries—Africa										
28. Egypt, Arab Rep.	126	375	20	37	44	36	4	5	32	21
29. Ethiopia	—	4	67	63	—	21	20	3	13	13
30. Kenya	13	128*	23	8*	—	—	2	1*	75	91*
31. Nigeria	17	78*	85	64*	—	—	—	—	15	36
32. South Africa[b]	443	4,111*	94	84*	—	—	—	—	6	16*
33. Tanzania	23	31*	93	86*	—	2*	—	1*	7	12*

*Figures are for years other than those specified.

[a] Includes unallocable data.

[b] Figures are for the South African Customs Union.

Source: World Bank, *World Development Report, 1987*.

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INTER-GENERATIONAL RESPONSIBILITIES*

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The paper deals with the problem of development in the context of responsibility of the present for future generations. Having identified the main differences between the proponents of the strategy of growth and the environmentalists, the author concludes that the two strategies can be reconciled by making economic growth and environmental protection mutually complementary. This is possible if growth includes also the development of the environmental technology and if it brings innovations in the rational use and saving of the non-renewable resources. In order to secure the welfare of future generations, a particular type of growth is needed, which is possible if the methods and criteria for the measurement of growth of social and economic welfare are changed: in place of the gross national product (GNP), we need value criteria of social wealth expressed in net figures. Our responsibility to future generations implies in the first place an equal distribution of the possible choices, rather than a simple provision of the same level of wealth. The author also considers the moral bases of this responsibility, noting that though responsibility for future generations cannot be fixed in formal logical terms, it remains rooted in instincts or simply in genetics based on so-called enlarged ethics. It is stressed that concern for future generations within given national boundaries not infrequently reflects the lack of concern for future generations outside national borders. Global responsibility could only be achieved through a supranational body that would impose values and rules of developmental behaviour.

Growthmen Versus Environmentalists

It is, on the face of it, odd that both growthmen (who embrace, of course, growthwomen) and environmentalists, who share a concern for future generations, should be so much at loggerheads. The need to accumulate physical and human capital for greater output and enjoyment later, at the expense of current enjoyment, is at the heart of high growth strategies. Sometimes we hear of the objective of "maximizing growth". This, strictly interpreted, would mean that we should tighten our belts to the bare minimum consumption for productive survival, accumulate the difference between production and consumption, and the last generation before doomsday could then indulge in an infinite consumption orgy. While the

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strategy is nonsensical, what greater concern could there be for the future? But even more sensible growth strategies aim at higher levels of income and consumption for future generations. On the other hand, conservationists, environmentalists, and ecologists wish to preserve a decent natural environment, and an adequate supply of raw materials for subsequent generations. They, too, have the welfare of future generations at heart. What then are the issues of disagreement? We might identify five.

(1) First, growthmen and environmentalists disagree on the form that provision for the future should take. Growthmen emphasize reproducible capital, and education and training (human capital), anti-growth environmentalists emphasize resources-minerals, open space, virgin land, clean air, safe water. They are worried lest rapid growth destroy these and leave future generations worse off. If environmentalists take exhaustibility seriously, the advocacy of zero growth is no remedy. Even zero growth requires depreciation of existing capital and leads eventually to exhaustion, though exponential growth does so sooner. The difference is merely a matter of time. The strategy would lead to the advocacy of not zero growth but zero consumption. But if the present generation would have to be extinguished in order to leave resources over for future generations, there would be no future generations. If, on the other hand, the environmentalists assert that technical substitutes for exhaustible raw materials can be found, so that the issue is a battle between technology and resources, the difference becomes an empirical question about the length of time and the appropriate policies. It is anybody's guess how long it would take for technological innovation to substitute for exhaustible materials. If it were the case that the rate of our technical progress exactly offsets the rate of depletion, pollution and risk creation, intergenerational responsibilities would be met according to both growthmen and environmentalists.

(2) A second difference is the degree of probability that the two groups attach to a sudden drastic change for the worse, such as irreversible pollution, or complete exhaustion of an essential resource, or complete dislocation of life that would spell disaster. Growthmen tend to attach rather small or zero probabilities to such events and view progress as a more continuous process, while environmentalists attach higher probability to such disaster, if current policies are continued.

(3) A third difference may be the rate of time discount that the two groups attach to the welfare of future generations, perhaps together with different estimates of when a disaster might occur. Assume that both groups agreed that it is possible, or even probable, that a disaster will occur in 5 million years. Antigrowthmen may have a longer time horizon, so that they attach greater negative weights to such a prospect, whereas growthmen may discount the very distant future at a higher rate. This higher discount rate has to be distinguished from their greater faith in the

"technical fix", the human ingenuity of avoiding the disaster, which is a separate point, more fully discussed below.

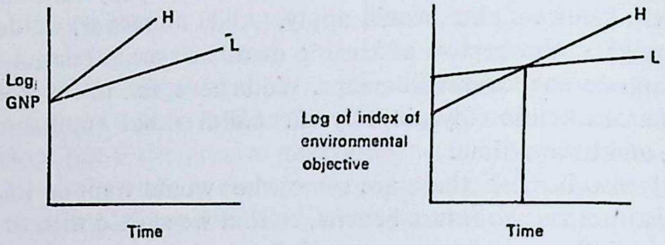
It may also be that two schools apply different time discount rates to the not so very distant future. The view that we owe special responsibilities to those near to us would fully take into account the lifetime of our children and their children, but might give decreasing weights to the welfare of subsequent generations. We may reply to this that if we love our children and those they in turn love, the love chain presumably extends into the indefinite future. In fact, however, we attach less weight to an extra dollar accruing to our great-great-great-grandchildern than to that of our grandchildren. On the other hand, even if we agree that the special relationship of kinship calls for stronger weight to be given to the welfare of those near to us in kinship or space or by some other bonds, it does not call for even lower weights the further they are away in time. Once the special relationship has levelled off, say with our grandchildren, the same weights would apply. And, moreover, we do attach the same weights, irrespective of kinship or other special relationships, to the infliction of some forms of damage. We believe, for instance, that it is wrong to harm intentionally not only our children but any human being anywhere, and at any time.

It could also be that there are some who would want us to apply a negative discount rate to future benefts, so that we should wish to sacrifice more than a dollar now for an extra dollar accruing to a member of a subsequent generation. A value system that attaches great value to the continued existence of the human race might support such negative discount rates.

(4) A fourth difference is in their estimate of the costs incurred in slowing down economic growth, where such slow-down is favourable to conserving exhaustible resources and reducing pollution. These costs comprise not only the costs of present forgone consumption, and the consumption forgone in the near future, but also the social and psychological consequences of a slowly growing or stagnating economy. All sorts of adjustment, between occupations, between regions, etc. are much easier in a rapidly growing economy, where shrinkage of certain sectors takes the form of redeploying only new entrants, than in a stagnant or slowly growing economy, where dismissal, unemployment and dislocation have to be suffered. Rapid growth makes adjustment not only less difficult and less painful, but whatever adjustments have to be made become easier to bear. More resources are there to maintain the unemployed at a higher level of income, and retrain and relocate them. Anti-growthmen, on the other hand, accept these costs and pains of slower growth as an insurance premium that we have to pay in order to avoid the risks of future dislocation or disaster, which they regard as more likely with rapid growth.

(5) A fifth and final difference lies in the confidence the two schools

have in a "technical fix". In the past, technical ingenuity has often substituted for exhaustible natural resources, but what guarantee is there that the future will be like the past? Anti-growthmen, who emphasize discontinuities, may quote the story of the man who fell out of the window of the 30th floor, and, when he reached the fourteenth, said, "so far, so good". In contemporary relations we do not regard it as legitimate to take detrimental actions on the presumption that the potential victims will invent ways of getting out of the scrape. Why should we rely on it in inter-generational relations? Given our ignorance and uncertainty surrounding the future, a sensible moral strategy would be to compare the costs of having relied on a technical fix when it did not turn up, with the costs of having sacrificed options and benefits now for the sake of avoiding such reliance, when in fact it did turn up.



It should also be remembered that growth can be complementary with environmental protection. If we count industrial anti-pollution devices and the technology that produces them and innovations that economize in exhaustible materials, as part of GNP (but for a different approach see the next paragraph), it is possible that a certain type of growth, consisting of many of these inventions, contributes positively to our environmental objectives. Even so, there is probably some trade-off between environmental objectives and economic growth in the short-run. The diagram illustrates temporal paths of GNP growth and of something to be measured by an index of the preservation of the environment and the conservation of resources. H is the high-growth path, L the low-growth path. We are measuring the log of the GNP and of the environmental index of the vertical axes, in order to show equiproportional increases as equidistant. Until time T the high growth strategy sacrifices the environment. But for ever after T, high growth promotes a purer and safer environment. Which path is chosen depends on the rate of discount for environmental objectives, compared with that for GNP. Since the marginal utility of consumption declines with rising income, whereas the relative value of reducing pollution rises with income, the rate of discount for environmental objectives is likely to be lower than that for GNP. (Some have even argued for a zero or negative rate.) If this is so, those who lay much store by the environment and by the welfare of future generations ought to advocate a higher, not a lower, growth strategy than that dictated by optimising consumption over time. Only then can devices to protect the environment (a growth industry), the technology that develops anti-pollution techniques, processes, products, and innovations that economize in the use of exhaustible materials develop sufficiently rapidly.

Goods and Anti-Bads

Another way of approaching the differences and reconciling them is from the point of view of measurement. Growthmen, after all, are concerned with the annual percentage growth of an aggregate of heterogenous goods and services. Since we do not aggregate these according to their weight or size, but their prices, which are supposed to reflect human valuations, a way to reconciling some of the conflicts is by adjusting the measurement of GNP and its growth. Now it is largely a measure of production, and, as the name says, it is gross, not net. We might approach the collection by trying to measure welfare, and to measure it net, rather than production, measured gross. Some might think that such a revision would bring together growthmen and environmentalists. If, for example, it were to be found that what we had been measuring was not goods, but anti-bads, produced in order to combat the bads produced by the process of growth, we might all agree that economic growth was not all that wonderful. But before discussing these issues, a more fundamental difference might exist. If the divergence between private costs, reflected in market prices and social costs, is so pervasive that it is not the exception (as in the smoke emitted by a factory that raises other people's laundry bills) but the rule, conventional accounting methods might fail us. Environmentalists might justifiably ask: can the choice between fresh air and unspoilt land on the one hand, and the motor car with all its implications on the other, be brought under the calculus of the pricing system? The choice between different total life styles, it may be said, cannot be subjected to the measuring rod of money.

Let us next assume that we do not have to accept such a radical critique of income measurements, and that shadow pricing can capture all divergencies between private and social costs and benefits. But we might still concede that we should not include in our income and welfare measure what have been called "regrettable necessities", or anti-bads. Perhaps growthmen and environmentalists might then agree that the growth of properly measured economic welfare is desirable.

Bads derive from three distinct sources: enemies, nature, and the economic system itself. Anti-bads made necessary by the activities of our enemies would cover expenditure on the army and the police. Anti-bads made necessary by nature are such things as the provision of shelter, clothing and heating against cold, or of airconditioning against heat. Carried to logical consistency, almost all goods and services are intended to remove some void. We eat because our physiology requires food for survival, and we sleep for the same reason. So food and beds could be regarded as anti-bads against the bads created by our nature. Only the most superfluous frills would, on this approach, be counted as "goods" (it would be an anti-Marxist definition of national income), and even they fulfill some whim, the removal of which could be considered as an anti-bad. But one can drive logical consistency too far. The most relevant bads in the present context are those created by the process of production itself. If production pollutes and we then produce an anti-pollution device, say a scrubber, it is an anti-bad that combats a bad produced in the course of producing other goods.

The anti-bads made necessary by our enemies and by nature are not relevant in the present context, but those made necessary by the production process itself are, as is the appropriate evaluation of exhaustible natural resources, because they affect the fate of future generations. But it does not follow that we must then opt for a lower rate of correctly measured economic growth, i.e. growth of income from which anti-bads are subtracted. For although we might opt for fewer goods, if they brought with them more bads and the need for anti-bads, we might also opt for even more goods, compensated by more anti-bads (the solution suggested on the diagram). Or we might opt for technical innovation that produces different types of goods, perhaps with fewer of the attractive qualities of goods, but also with fewer complementary bads. What we should avoid doing is just producing more goods that produce bads (e.g. pollution), without either the anti-bads or the redesign. Some of the differences between growthmen and environmentalists can be reduced by a proper redefinition and measurement of net national income as a measure of welfare and its growth.

Future generations are particularly exposed to our creation of bads. As Sidney Holt has argued[1], they are not only without a voice, without votes in the present, but in addition, they are "downstream" (in time) and therefore vulnerable to any harmful effects we may be inflicting on them, like people who have to live downstream from a polluting factory. They are therefore both powerless and vulnerable. It is from this awareness that the claim to appoint a trustee or guardian for the interests of future generations has sprung. What may be needed is a society for the propagation of anti-bads, especially for the protection of future generations.

But deducting anti-bads from a measure of net economic welfare raises more fundamental problems. We have so far concentrated on bads such as pollution that require anti-bads such as scrubbers. The economic system also creates certain desires (or voids), the satisfaction of which calls for scarce resources. Had it not been for this creation, the resources could have been left unused, or used for purposes of satisfying "natural" not "artificially created" desires. Advertisers persuade us that, unless we keep ourselves dandruff-free, we shall not be rechosen by our loved ones at breakfast. Or they create in us the fear that if we do not use the deodorants or mouthwashes they sell we shall be shunned by our friends and neighbours. The fear of not being sociably acceptable or loved may have been there all the time, but its focus on specific deficiencies that can be removed by buying the advertised product is generated by those producing and selling the product. Is this situation not parallel to the emitter of smoke who imposes the need to install a scrubber? Should we not eliminate from our welfare calculations goods bought only to remove created fears? The situation is like that of a blackmailer or kidnapper or protection racketeer who creates a nuisance for the removal of which he then extracts a payment. Such payments, it might be argued, bring us back to square one, they do not add to our welfare.

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[1] Sidney Holt, "Towards Ensuring the Rights of Future Generations : Scientific Aspects", UNESCO paper, September 1982, p. 4.

Yet, the problem is not so simple. Not only some of the nastiest feelings of jealousy, competitiveness and fear of ostracism can be artificially created, or stimulated, but also some of the highest desires: the desire for beauty, truth and goodness, the wish to buy and enjoy books, paintings and music, is not "natural" but the result of an often painful process of education. Those of us who are university teachers know. It is not a question whether the created desires are artificial or natural that should guide us, but whether they are bad or good. We need a value judgment before we can decide whether an item should be included in or excluded from our measure of economic welfare. Not all artificially created "bads" call for "anti-bads" that we should want to exclude from our measure.

The only reason for not including all goods and services responding to the "artificially created" desires of education is that some have to be excluded from net income as replacements of human capital. As older people retire from the labor force, and as skills become obsolete, their replacement calls for educational efforts which are of the same nature as those items of physical capital that replace worn-out plant and equipment.

The main conclusion of this discussion is that we cannot identify "bads" with voids generated by the society (and not "naturally" given), but that we must exercise value judgments before we can evaluate the net national income as a measure of economic welfare. This leaves then an area for possible disagreement between those who put a higher value on resource-using or polluting activities that add to current welfare and those who put a lower value in favour of the welfare of future generations.

The Time Discount Rate

Why should I do anything for the future? The frivolous and facetious question what has the future done for me? may as Wilfred Beckerman has pointed out,[2] have an important content worth further exploring. Positive discount rates are powerful instruments of downgrading the future. At a discount rate of ten percent, a given increase in welfare next year counts for ten times as much as the same increase in twenty years, and at five percent, next year's benefit counts for more than a thousand times as much as the same benefit in 200 years.

Some people regard it as irrational to discount the future at all. Many of the apparent reasons for discounting the future are based on other principles than the passage of time, though some are loosely related to time flow. Events in the future are uncertain, and this would require that we attach probabilities of less than one of them. A special case of the reduced probability of a harmful event in the future is the case where the same event if it occurred now would be very damaging, but we believe that inventiveness will produce later a technology that will enable future generations to overcome the problem. An example would be the disposal of nuclear waste. But the reason for discounting such damaging events is then not that they are in the future, but that their occurrence will be less problem. Although there is a relationship between the future and uncertainty, events do not grow more uncertain the more distant they are in time. Indeed, in some cases it is easier to predict events in the more distant future.

Future generations may be better off than we are now, and the marginal utility of an extra dollar to a richer man is less than to a poorer man. Or his moral desert of getting an extra dollar may be smaller. We should not permit a member of our generation to go hungry in order to add a second car to a member of a future generation. But, again, the reason for discounting his benefit is not future time, but higher income. If someone in the future were to be poorer than we are now, his marginal utility or desert would be greater, and the appropriate "discount rate" would be negative.

Derek Parfit discusses additional apparent reasons for discounting the future, which he rejects.[3] One is the argument from opportunity costs. Earlier benefits can be used to yield greater benefits later. An investment next year can yield much more over the next ten years than had we made the investment after ten years. Delaying the investment therefore imposes opportunity costs. But once again, the reason for putting a premium on nearer events is not time, but their yield. This can be seen when we consider benefits that are not invested but consumed. Parfit uses the example of the enjoyment of a beautiful landscape that results from not building an airport. This enjoyment is the same next year and in ten years' time, and should not be discounted. It is also true that if, for example, we were to compensate for certain genetic deformities, a sum invested now would yield more money for compensation than the same sum invested later. But Parfit argues, correctly, that it is not the distance in time of the later deformity that matters, but the investment and compensation. Were we not to compensate, this would become irrelevant.

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[2] Wilfred Beckerman, "Human Resources: Are They Worth Preserving?" in *Human Resources, Employment and Development*, Vol. 2, *Concepts, Measurement and Long-Run* Perspective, edited by Paul Streeten and Harry Maier, for the International Economic Association, Macmillian, 1983.

[3] Derek Parfit, "Energy and the Future," ed. by Douglas MacLean and Peter G. Brown, Maryland Studies in Public Philosophy, chapter 2.

Parfit also discusses what he calls the argument from democracy. Since most people care less about the future, the government, reflecting the views of the electorate, should discount it. But unless we believe that what the electorate wants is *ipso facto* right (vox populi, vox dei), the question of whether we should or should not care less about the future has to be answered independently of what the majority wants.

Another argument considered by Parfit is the argument from excessive sacrifice. Without a discount rate, any small increase in benefit that extends indefinitely in time could demand any amount of sacrifice in the present, because in time the benefits outweigh the costs. But, once again, the objection to the argument is that no generation can be required to make excessive sacrifices for future generations. Parfit illustrates this by supposing that, at the same costs to us now, we could prevent either a minor catastrophe in the nearer future or a major catastrophe in the further future. "Since preventing the major catastrophe would involve no extra cost, the Argument from Excessive Sacrifice fails to apply."

Finally, Parfit discusses the argument from special relations. We have greater responsibilities to certain people to whom we stand in special relations: our children, parents, students, patients, clients, fellow citizens. And future generations do not stand in any of these relations. But first, it is the distance in the relationship, which may be correlated to distance in space or in time, rather than the distance in time that matters. Second, the discount rate according to special relationships levels off, and does not increase with time. Our obligations to the tenth generation are no less than to the ninth or eight. Third, the duty to avoid inflicting grave harm applies to *all* people, now and in the future.

People who argue that we should not discount the future at all would attach the same weight to enjoyment by myself now, in a few years' time, and by all future generations. The refusal to do this has been called by A.C. Pigou the lack of telescopic faculty, and by Roy Harrod the conquest of reason by passion. It must be concluded from the previous arguments that there is no case for a positive time discount rate.

Our Responsibilities to Future Generations

What does intergenerational justice demand? A utilitarian approach might suggest that we owe future generations the same level of utility that we are enjoying now. Since we do not know and cannot determine the size of future generations, this must apply to total utility, distributed among their numbers according to a different set of principles. But there are well known difficulties in distributing utility, happiness or welfare equally, and Brian Barry has argued convincingly[4] that it is opportunities, not welfare, that should be distributed equally over generations. For energy this would mean that we should leave future generations the same productive capacity and therefore the same opportunities to produce that we enjoy. If we deplete some exhaustible resource, we should have to compensate for this by some technological innovation or capital accumulation that makes any given amount of oil or coal yield more energy, or substitutes by some other source for the depleted resource. But compensating for depletion presupposes our knowing how much we should have left to future generations without the depletion. Would it be just if we consumed all the capital we inherited from previous generations and only compensated for the depletion of natural resources we caused? Or would it be just if we added to man-made capital as much as the previous generations had added? Or should we leave the same amount of man-made capital that we inherited, plus compensation for the depletion we caused? These are difficult questions and no answer will be attempted here.

Brian Barry discusses the question, "what does adequate compensation in practice mean? If we develop a technology that enables us to raise the rate of extraction by the same proportion that we have used up the resource, that would be adequate compensation. Or if we invent a technology that gives us as much more power as we have used up, maintaining effectively performance, that also would qualify. Such guidelines take us some way, but not all the way, for different forms of energy have different benefits and costs, which it is not easy in practice to bring to a common denominator.

All this presupposes that humanity should survive. Yet, as Wilfred Beckerman and others have shown, the assumption that we should perpetuate mankind is not logically justified. What is the loss of people who were never conceived and born (say, as a result of contraception or abstention or annihilation of the human race)? Who, if anybody, is worse off because these people have not been born, compared with their potential existence?

We have to turn to the basis of our moral obligation to others and specifically to future generations. Different answers have been given. The facetious question raised above suggests that future generations cannot benefit us. But they also cannot harm us. And one tradition in moral philosophy bases moral obligation on the ability to do harm. Hobbes talked about "convenient articles of peace", which prevent us from harming other people in order to avoid being harmed ourselves by them.[5] If this is the social basis of moral law, we would have no obligations towards future generations, for they are not capable of harming us.

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[4] Brian Barry, "International Justice in Energy Policy", in *Energy and the Future*, ed. by Douglas MacLean and Peter G. Brown, Maryland Studies in Public Philosophy, Rowman and Littlefield, New Jersey, 1983.

Another basis for moral obligations is Locke's theory of entitlement, according to which a man can do whatever the wishes with his own, if he has legitimately acquired it. The main current expositor of his view is Robert Nozick. From it follow no obligations at all to future generations. If we wished to destroy everything we own, or ask our executors to do so after we die, this would be fully consistent with our moral obligations. A third theory is that of Rousseau, who bases moral obligations on our sense of community. But here again, it is hard to see how we can postulate a sense of community with numerous as yet unborn members of future generations.

So neither the approach and tradition of Hobbes, nor that of Locke, nor that of Rousseau help us in formulating moral duties for the welfare, interest or benefit of persons not yet, or never born. And it is this that we are concerned with when we talk of future generations. Can it be in a person's interest, or, for that matter, against the person's interest, to have been born? Beckerman and Parfit argue that the answer is No. For if we say it is in a person's interest to have been conceived, we say that this person has benefited from receiving life. But to benefit is to be made better off than he would otherwise have been. But if he had not been conceived, he would not "otherwise have been". However happy his life would have been, had he been born, he does not miss this happiness, not having been born. It is therefore meaningless to say that people benefit from having been conceived and born. The argument is taken one step further by Beckerman. He suggests that even happy people should commit suicide. They will not miss their happiness and might miss some unhappiness that they might suffer later.

Does the same apply to being worse off for having been born? Some time ago there was a lawsuit of an utterly disabled, miserable person against a doctor's inefficient sterilisation of that person's mother. Beckerman argues that the situation may not be symmetrical, and that it might be possible to say that a person would be better off not having been born. (There is a tradition in literature going back to Sophocles asserting that "not to be born is best.") But if we accept the argument that we cannot say that a person is better off than if he had never been born (or conceived), we destroy any claims of future generations on our concern.

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[5] Brian Barry, "Justice Between Generations", in P. M. S. Hacker and J. Raz (eds), *Law, Morality and Society*, Essays in honour of H. L. A. Hart (Oxford, 1977).

Is there not a contradiction in maintaining that there is no case for a positive discount rate and that there is no case for assuming the desirability of the existence of future generations? Can we argue simultaneously that the enjoyment of future generations should count the same as our enjoyment, and that their existence is not desirable? I think the contradiction is only apparent. The argument is that *if* future generations exist, their enjoyment should not be discounted, but there is no case for the perpetuation of the human race.

Parfit suggests an example. Let us assume that we choose a policy with benefits to us that leads to a catastrophe after two centuries. Had we chosen a safe policy and sacrificed these benefits, the catastrophe would have been avoided. But the people who are harmed by the dangerous policy are different people from those who would have existed had we chosen the safe policy. The timing of the meeting of parents, and of the conception is different, and therefore different people are born into the world. According to Parfit, the dangerous policy is not worse for anyne who ever lives.

Various attempts have been made to escape this conclusion. For example, we might "look in the opposite direction."[6] Our duties are not to future generations, but to our ancestors, who laboured to make us better off, but not only us: subsequent generations as well. This view fits the view that we are only trustees of the environment which we inherit, and should hand it on in at least as good a condition as the one in which we received it. But the value of the traditions handed on to us by our ancestors has to be independently assessed. Some of the heritage has been bad, and has to be rejected, like slavery or imperialism. So "looking in the opposite direction" for a moral justification may add strength to duties independently regarded as valid, but it does not provide a basis for our responsibilities.

One way out of the repugnant conclusion that there is no basis for our responsibilities to future generations is to say particular persons not being made worse off by our actions is not the only reason why these actions can be morally condemned. Assume our action produces the result that the population of people, though themselves not worse off, is worse off than an alternative, hypothetical population of the same number, who would have enjoyed greater benefits had we abstained from our action. Derek Parfit and Douglas MacLean have argued that our action may then be regarded as wrong, even although nobody is made worse off by it. Sidney Holt appears to argue along similar lines when he writes that"... to the extent that humanity, past, present and future, is perceived as one with the rest of nature—or, at least, with the living world, the biosphere—

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[6] Douglas MacLean. "A Moral Requirement of Energy Policies", p. 187 in *Energy and the Future*, ed. by Douglas MacLean and Peter G. Brown, Maryland Studies in Philosophy, Rowman and Littlefield, N. J. 1983.

so discussion of the rights of animals is inseparable from discussion of the rights of humanity."[7] Others, on the other hand, think that a policy that makes nobody worse off cannot be morally wrong, even if the fate of people who might have lived, but never did, would have been improved by a different policy.

Even if there were no reason in terms of people's interests for accepting responsibility for the fate of future generations, there may be other reasons. Brian Barry ends his article on "Justice Between Generations" by saying that ". . . if I try to analyse the source of my own strong conviction that we should be wrong to take risks with the continuation of human life, I find that it does not lie in any sense of injury to the interests of people who will not get born but rather in a sense of its cosmic impertinenece that we should be grossly abusing our position by taking it upon ourselves to put a term on human life and possibilities."[8] In spite of the logical difficulty of justifying the continuation of the human race, we shall in the following accept Brian Barry's view and assert instinctively or genetically or on the basis of a new, extended ethics, not based on benefits and harm to the interests of people, the desirability to perpetuate it.

Some Specific Problems

Sometimes the concern for social justice among contemporaries and between generations is presented as a conflict: why be concerned with future generations when we have so many poor and so much inequality among us now? Trade unionists and the unemployed advocate large projects such as hydroelectric dams and call the ecological opponents "gentleman's kids". The ecological blame industrialists for greed and causing future ecological disasters.

But there is no such conflict. In principle, having decided upon how much we owe to future generations, the remainder can be distributed in as egalitarian a manner as we wish. Any anti-poverty strategy must have a temporal dimension, and it would be as wrong to remove all poverty now by aggravating poverty later, as it would be to starve ourselves in order to provide plenty for the future. Indeed, since it is the present high-income consumers who use up most exhaustible resources, justice requires that compensation be paid both to low-income consumers and to future generations.

A specific obstacle to exercising our responsibility to future generations arises from an institutional lag, or deficiency. Let us suppose that national governments have assumed responsibility for future generations and, as a result, have adopted policies to conserve exhaustible raw materials and avoid excessive pollution. This assumption is not quite unrealistic, for many governments have in fact adopted such policies. Indeed, it could be argued that it is precisely one of the functions of government to take on these responsibilities through public action, because any one individual, however eager he was on achieving the objective, could not give force to his desires in the absence of coordination or even enforcement of other individuals. It is what economists call a public good.

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[7] Sidney Holt, "Towards Ensuring the Rights of Future Generations: Scientific Aspects", UNESCO paper, September 1982, p. 2.

[8] Brian Barry, "Justice Between Generations", in P. M. S. Hacker and J. Raz (eds), *Law, Morality and Society*, Essays in honour of H. L. A. Hart (Oxford, 1977).

Having achieved the right policies at the national level, the danger arises that the damage will be exported. Resources outside the national boundaries will then be excessively exploited and the air and water beyond the frontiers will be happily polluted. It is likely that these forms of transnational damage would be even greater than if the national government had taken no action. The growing dispersal of acid rain outside national frontiers as a result of high chimney stacks, imposed to avoid national pollution, and the danger of the extinction of whales are examples.

The greater concern shown for future generations inside the national boundaries has led to a situation in which the same concern outside these boundaries is reduced. The reason for this is that we do not have a world government, a global authority, that would enact the appropriate rules. Even if each nation state were individually concerned about the future of the world community, and not only about future generations inside its borders, it would not be able to give effect to this. The result is a prisoner's dilemma situation in which each nation is made worse off by the impact of the actions of others. There are also difficulties in getting coordinated action on the part of a group of nation states. For each state will hope to benefit from the actions of others, were these to show global concerns, without itself contributing to the costs and restraints. It is the free rider problem, superimposed upon the prisoner's dilemma. The solution lies in a surrender of national sovereignty to a supranational authority with power to impose laws and regulations that safeguard the interest of future generations of the global community.[9]

What kinds of moral obligations to future generations may arise? If an action has no consequences affecting future generations, or entirely beneficial ones, no problem arises. But there are two kinds of other actions. First, actions which benefit us may have harmful consequences for future generations, and, second, actions which impose a sacrifice on us may have beneficial consequences. In addition to these choices, there may be actions, whether beneficial or harmful to us, that have different impacts on different future generations, beneficial to some, harmful to others.

It should, however, be noted that in many cases actions that impose an apparent sacrifice turn out, on close inspection, to be profitable, so that conflict can be avoided. A company called 3M established a program that it called + P, which stands for "Pollution Prevention Pays."[10] Once product and process innovation are included in the analysis, it turns out there are many unexplored and unexploited profit opportunities that manifest themselves in response to the challenge of pollution control. If the costs of these innovations are less than the new profits to be earned, the whole operation turns out to be economical even from the firm's point of view. In this case no conflict between present and future interests arises.

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[9] See Peter Inglott, "The Rights of Future Generations: Some Socio-Political considerations", UNESCO paper, unpublished.

Let us take as the first illustration the exploitation of exhaustible and irreplaceable natural resources, such as fossil fuels, mineral reserves, ocean fisheries, tropical forests, etc. It is quite possible for the reductions in these nature-given resources to exceed the accumulation of man-made capital. If this is so, we are using up capital that we have inherited and leaving future generations worse off. Even if there is a net addition to the sum of natural and man-made capital, not making full allowances for the exploitation of natural resources in our national income accounts would lead to overstatements of the amount we leave to future generations.

Let us take as another illustration the dangers to future generations that arise from nuclear power. First, there are the technical dangers of accidents in the extreme case of a core melt in a reactor. But there is also great uncertainty about the dangerous effects, some possibly genetic, and over a long period, of milder exposure to radiation.

Secondly, there is the danger that material may be stolen from a plant and used for the fabrication of nuclear bombs. A proliferation of such bombs, particularly in the hands of terrorists or other extremists who would not hesitate to use it, constitutes a considerable danger.

Third, there is the danger of sabotage at the plant by enemies or opponents of certain policies. Fourth, there is the danger of an attack in war or civil war on the plant and the consequential release of radiation. Fifth, there is the problem of nuclear waste disposal. Such waste has a very long life and risks continue for hundreds of years, while all the benefits accrue to the present generation.

A very serious, not much discussed sixth risk to future generations arises from the need to protect the plant against terrorists, saboteurs and enemies. The guards that police these stations have to be armed and given a high degree of discretion with regard to the use of their weapons. Armed private armies are a new phenomenon in democracies and constitute a threat to our civil liberties. It may well be that this social and political threat is more serious than the technical risks of breeder reactors.

The crash of an airliner in which 40 people are killed makes headline news, but the death of 40 motor car accident victims in different places does not. Spatially concentrated death from a nuclear accident or sabotage is judged worse than random or dispersed death. This reinforces the argument that risks of a disaster befalling simultaneously groups of people are worse than risks in which the same number of victims is distributed over time.

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[10] Joseph I Ling, vice-president, environmental engineering and pollution control, *Pollution Prevention Does Pay*, 3M Company, USA. *Industry and Environment*, Vol. 7, No. 2, United Nations Environment Programme, 17 rue Marguerite, 75017 Paris.

To this must be added another element: death caused by the actions of others is judged worse than that caused by our own acceptance of risks. We accept the same risks caused by our rock climbing or driving motor cars that we would not accept if they were inflicted on us involuntarily. And risks from nuclear power are among those that are "downstream". Future generations are both powerless and vulnerable.

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INDIAN ECONOMY AT THE DAWN OF THE 21st CENTURY

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As early as 1919, the noted economist on Indian development problem, Vera Anstey, examined the problem of "the arrested development of India" in her monumental work, *The Economic Development of India.* She considerd several questions about India's present and future. The foremost of them was: "whether or not the way has been prepared for a great forward movement that will bring India into economic line with the industrialized countries of the West".[1]

That very question is awaiting answer even today. A degree of urgency has recently been added to that question with the repeated emphasis by the Prime Minister throughout this year on India's transition to the twenty-first century. He has singled out the central contribution which modern science and technology could make to the technological transformation of India[2].

The inexorable compulsion of the movement of the calendar will no doubt land us, along with the rest of humanity, into the 21st century. The central question, therefore, is not whether we will land into the 21st century. That will happen anyhow. The question that matters most is the kind of India that will be entering the 21st century. How advanced will that India be, compared with the one we inherited at the time of Independence? What progress will have been made in overcoming its arrested development in catching up with other advanced nations in the world community and in reducing economic inequalities within the country? These are some of the questions awaiting answer.

Fifty-six years have elapsed since Professor Anstey wrote on India's development, and over 40 years since Independence. Eight general elections have been held. Seven Five Year Plans—not to mention Annual Plans and Plan Holidays—charting the process, very rich experience has been accumulated. It is time therefore to review this experience and assess the road we have travelled and the choices that have been made for us.

I will begin with the principal objectives of India's planned development, and then move on to examining how far they have been achieved,

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[1] Vera Anstey, *The Economic Development of India*, (London, 1929), p. 1.
[2] See several statements by the PrimeMinister, Shri Rajiv Gandhi.

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mainly between 1950 to 1980. Particular attention will be paid to comparing our economic progress with that of other countries, especially in the Third World, and to the reduction of inequalities of income and wealth and concentration of economic power. The concluding part will then take up how we have moved towards the India we want,[3] the India of our dreams, and the choices that may still be open to us if we are not to accept, by apology or default, the India we have got.

I. Principal Objectives of India's Development Planning

The second Development Plan had early stated the central objectives of India's planning.[4] Achievement of Socialist pattern of society was declared as the major objective. The Second Plan then set down four principal objectives:

1. A considerable increase in national income so as to raise the level of living in the country;
2. Rapid industrialisation with broad emphasis on the development of basic and heavy industries;
3. A large extension of employment opportunities; and
4. Reduction of inequalities in income and wealth and a more even distribution of economic power.

These four objectives are all clearly interrelated. It was expected, though never clearly stated, that a movement towards their attainment will contribute to the establishment of a Socialist pattern of society.

It should be pointed out that these four objectives were not equally formally embodied in the Plan model. The third objective—a large expansion of employment opportunities—was by and large taken to follow as a consequence of the attainment of the first and the second objectives. In sharp contrast, the fourth objective, that is the reduction of inequalities in income and wealth and a more even distribution of economic power, was put in there, perhaps upon the insistence of Pandit Nehru. It has continued to be incorporated in successive Plans, though without ever becoming an integral part of the consistency models used in the Plans for the first two objectives.

II The Records[5] 1950–1985

(*a*) *Growth of Output*—Between 1950 and 1980, our national output has increased 2.8 times. Since India's population increased over 90 per cent during these 30 years the increase in per capita income was much smaller—amounting to only 43 per cent.

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[3] Surendra J. Patel, *The India We Want: Its Economic Transition*, Prof. D. P. Mukherji Memorial Lectures (Bombay, 1965).

[4] *The Planning Commission, The Second Five-Year Plan* (New Delhi, 1955).

[5] As far as the target of a large expansion in employment opportunities in concerned, it was simply expected to be a sequential result of the expansion in output. The objective of reduction of inequalities did not have even such a fig-leaf of expectation; it was simply there because of political expediency, without even meriting any systematic approach.

Agricultural output has more than doubled. Food grain production is more than twice as high as in 1950. Wheat output has increased 5 times, supplies of sugar 3 times. Rice, Bajra, Jowar and cotton have all more than—or nearly—doubled. On the other hand, the output of pulses and major oil-seeds has witnessed an actual decline on a per capita basis. We have been the pioneers of the Green Revolution, over-valued in official circles and over-maligned by its critics.

The expansion of industry could be considered impressive. By 1980, industrial output had risen to nearly 5 times its volume in 1950. A whole series of new industries have been built up. In comparison with 1950 we are now producing 3 times more coal, 5 times more pig iron and steel, 6 times more cement, some 20 times more electricity and over a hundred times more fertilizers. Industries unknown in the past such as machine-tools, power generators, heavy chemicals, pharmaceuticals and electronics—have now sprung up all over the country. The old map of India, dotted with temples, mosques and palaces, is changing rapidly with the appearance of the new rival symbols of India's modernization.

There have been some structural changes. For example, the share of agriculture in GDP has declined, with services showing a greater rise than industries. The structure of industrial output has altered. In 1950, nearly two-thirds of India's industrial output consisted of consumer goods: Now, nearly two-thirds of it consists of intermediate products (including mining), capital goods and essential inputs such as electricity. The relative shares of these two groups have been reversed. India's industrial profile now looks like a twin brother of that of the industrially developed countries, though showing signs of "arrested" development. The structure of foreign trade, both exports and imports, has also reflected these changes.

Gross capital formation had risen from 10 per cent of GDP in 1950 to over 20 per cent in 1980, or not much below the current levels in most of the developed countries (with the notable exception of Japan). Parallel to the rise in capital formation, there has also been a significant increase in development expenditures. Their share in GDP has grown up from 3 to 4 per cent in the 1950's to around 12 to 14 per cent now. Health services have expanded. The number of doctors, hospitals and nurses has increased. Electricity supplies to villages has gone up. The magic lamp has replaced the flickering oil wick in most of our villages.

The advance in education has been almost spectacular. Since Independence there has been a veritable educational explosion in India. Most of the younger generation has been sent to school. The number enrolled in universities and institutes of higher learning have grown 25 times—from some 200,000 at the dawn of Independence to some 5 million now. The Third World is jealous of India's scientific and technological achievements in nuclear energy, space research, and so on.

(*b*) *India's Regression in the World Economy*: How do we judge this advance? The tempo has of course been much greater than in the years of colonial rule. But how does it compare with the advance in other countries during this period? There are several very well known difficulties—both conceptual as well as statistical—in making such comparisons. I have recently attempted such an exercise in some detail in a paper recently published in *The Economic and Political Weekly*.[6] There is therefore no need to give many details here (see Table 1, 2 and 3 in the Annex.). But perhaps some of the highlights may be given here.

The rate of growth of nearly all the major parameters of economic development between 1950 and 1980 has been generally lower in India than that in the developed countries as well as in the Third World. It is only in accumulation that our growth rate has equalled that of the Third World and is somewhat higher than that of the world as a whole.

These slow growth rates had their inevitable consequence: a sharp reduction in the share of India in the world economy. India's share in world GDP has fallen from 2 per cent in 1950 to only 1.4 per cent in 1980 (see Annex. Table 1)., The decline has been greater when compared with the Third World GDP, falling from 10 per cent in 1950 to only 5.4 per cent in recent years. Our share in world agricultural output has fallen from 11 per cent in 1960 to 9 per cent in 1980. The fall in our share in Third World agriculture was larger—from 25 per cent in 1960 to only 17 per cent in 1980.

The regression is even greater in industrial output covering mining, manufacturing, electricity, gas and construction. In 1950 we accounted for 1.2 per cent of the world industrial output. The share had fallen to only 0.7 per cent by 1980. This estimate of world industrial output excludes the data for the Socialist countries in Eastern Europe and Asia (including both the Soviet Union and China). These countries together now account for one-third to two-fifths of the world industrial output, depending upon the estimators. If their output is taken into account, India's share would then be less than a mere 0.5 per cent of world industrial output.

The decline in India's share in the Third World industrial output was still greater—from 11 per cent in 1950 to no more than a bare 3 per cent by 1980.

It has been maintained that in the early post-Second World War period, India occupied the tenth place in the world league of industrial nations.

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[6] For details and all the data and their sources, see Surendra J. Patel, "India's Regression in the World Economy", *The Economic and Political Weekly*, Vol. XX, No. 39, September 28, 1985.

It has now gone down the ladder to the 27th place.[7] Several countries, some of them very small ones, are ahead of us. Four Third World countries are ahead of India: China, Brazil, Mexico and Romania.

These comparisons are, however, highly misleading in an important sense. India is a very large country next in its population only to China. If industrial output were to be measured on a per capita basis India's relative place would be far down the line. Thirty-five developed countries and at least 65 Third World countries had in 1980 a higher per capita industrial output than India. It means that India is below the 100th place in the world hierarchy of industrial nations. India's per capita industrial output is in fact lower than that in 10 of even the least developed among the developing countries, and roughly equivalent to that in another 5 of them.

Even in the pride of India's achievements—the engineering sector—its machine tool output in 1979 was lower than that in 20 other countries, including some Third World countries e.g. Brazil, China, Rumania and the Republic of Korea.

A similar regression is also to be observed in foreign trade. At the beginning of the 19th century, India accounted for nearly 10 per cent of world trade, reflecting the preeminence of Great Britain in world commerce. Since then this share has kept on falling—to 7 to 8 per cent at the end of the 19th century, to 4 per cent in the early twenties, 3 per cent in the 1930's, 2 per cent in the early 1950's and no more than 0.5 per cent in 1980. Here is a background well worth remembering by the heroes of an export-led growth strategy for a country as large as India.

Many of the overall comparisons described above did not include data on China. But in view of several similarities between the countries—not to mention their position as rivals in models of development—we may compare here some physical indicators (see Annex., Table 2). India had a comfortable lead over China in 1950. It was at that time ahead of China in the output of most industrial items. In the past 35 years, however, there has been a dramatic change in the comparative position of the two countries. India's early lead has disappeared in most of the major items except for milk, a low priority in China, and enrolment in third level education, a special hallmark of India's achievement. China now outproduces India over 5 times in meat, sewing machines, radios, lead, crude oil, copper, gas, eggs, paper, primary energy consumption, sawn wood and coal. It outproduces India between 3 to 5 times in nitrogenous fertilizers, cement, pig iron, steel, sulphuric acid, hydrochloric acid, zinc, caustic soda, bicycles and soda ash. China's lead over India is 1.5 to 3 times in phosphoric fertilizers, machine tools, electricity generation, cotton lint, cereals, aluminium, fish and cotton fabrics. Since the population of China is some 40 per cent higher than that of India, China is obviously ahead of India on a per capita basis in the production of all these 30 important items.

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[7] UNIDO, Handbook of Industrial Statistics (New York, 1985), Table 2; and Industry in a Changing World (New York, 1983), p. 50.

Attention may also be drawn here to some important social indicators in which China has moved significantly ahead. Life expectancy in China is 64 years against India's 51. China's adult literacy at 66 per cent of the population is significantly higher than India's 36 per cent. Impressive indeed is the enrolment in primary education covering 93 per cent of the relevant age-group in China; the comparable coverage in India 64 per cent. The difference is even greater when it comes to secondary education where more than half the relevant age-group is enrolled in China with the proportion in India amounting to under 30 per cent.

How can one sum up such a picture? True enough, we have advanced on many fronts. And advances have been significantly greater than what had happend in the past century under colonialism. But when we compare them with the achievements of the rest of mankind, there is indeed a serious cause for concern. India's relative eclipse in the world economy has proceeded along a broad front.

The discussion upto now was based upon data for the 30-year period between 1950 and 1980. Since, the developments have been more favourable on some counts. First, the rate of economic growth appears to have improved slightly for the period 1980–84—up from the hardly perennial 3.5 per cent a year to around 5 per cent. Second, population growth rate has declined somewhat so that per capita income growth would be to that extent higher. Thirdly, the developed countries both capitalist and socialist and most of the Third World countries have witnessed a drastic decline in their growth rates. Some have shown even negative performance under the severe impact of the deterioration in the world economic environment. To the extent that India has maintained or indeed raised, its growth rate, there will be an improvement in its relative share. A quick calculation, however, suggests that change will not be statistically significant—amounting to a recovery from the 1950 to 1980 regression by less than one-tenth in the decline in its share in world GNP (check).

India's regression on such a broad front raises several questions of economic, social, political and, above all, strategic significance. Some of the most pressing ones may be posed here.

1. Why is it that such a promising latecomer to industrialisation as India has failed to make a dent in the entrenched position of the early starters? Why has it fallen behind even several countries of the Third World?
2. Why have we fallen behind despite the fact that India has in the last 30 years been a pioneer in the Green Revolution, raised its rate of capital formation from around 5 per cent to over 20 per cent,

eased considerably strains on its balance of payments, developed a strong capital goods and engineering industry, and created an impressively advanced skill profile of which so many countries are justly so jealous? Why have we been faced with the onset of acute arthritis in the very adolescence of our industrial development?

3. What new strategic approaches need to be evolved to overcome our persistent regression in the world economy?

III. The Reduction of Inequalities in Income, Wealth and Economic Power

Let me now come to the fourth principal objective of Indian planning—the one relating to the reduction of inequalities in income, wealth and economic power. As indicated earlier this objective does not constitute an integral part of the objective. Nor has there been any systematic review and appraisal of progress, if any, achieved and of the obstacles faced. Nor have any quantitative targets been established for movement towards the attainment of this objective. Nor indeed have there been serious efforts to build up the necessary statistical base to measure the movements and to analyse implications. The lone indicator has been the "poverty line" and the percentage of population below or above it, as derived from the National Sample Surveys.

Because of these weaknesses the subject cannot be discussed with the same statistical precision as was possible in the preceding section. But in view of the vital importance of this objective, an attempt must be made, no matter how imprecise the findings and tentative the conclusions, to give at least an impressionistic view of the direction of change. I will try here to put together some of the pertinent data on personal consumption based on sample surveys, and combine them with changes over time in personal income so as to indicate the broad direction of change in the concentration of wealth and economic power.

Changes in Personal Consumption

Several rounds of the National Sample Survey have now furnished us information on rural, urban and all-India consumption. There has been a vigorous debate about poverty and inequality. Some have argued that the poor in India have become poorer still. Others have dismissed such a view as emanating from biased use of statistics by the left wing critics of the government to show whether the poor have in fact grown poorer. But both the left and the right agree on one point: there is little ground to show that any serious improvement has in fact taken place for vast segments of our population. Nearly all persons, irrespective of the place they occupy in the political spectrum, feel exasperted at the slow pace of our economic progress, particularly as it has failed to improve the conditions of the vast masses of our population and at the absence of any noticeable trickling down of the benefits of whatever overall growth has taken place.

The debates on this question have generated a great deal of heat, but it would seem to me that a central aspect has not been given adequate attention. Between 1950 and 1985, India's real per capita income increased by no more than around 68 per cent. During the same period, however, the items which did not enter into the personal consumption stream have increased much more. These are the items which account for the difference between gross domestic product (GDP) and personal consumption. They include: personal savings, personal taxes, corporate profits, corporate savings, social insurance contributions, direct business taxes and capital consumption.

These items together have risen from some 15 per cent of gross national product in 1950 to around 35 per cent of the total by 1985. They have devoured in the process 44 percentage points of the 68 per cent increase in real per capita income. In consequence, the share of personal consumption in GDP has fallen from some 85 per cent in 1950 to around 65 per cent in 1985. This then means that real personal consumption on a per capita basis has increased by not much more than 24 percentage points over the last 35 years—or at only 0.6 per cent per year.

The increase is so infinitesimally small that even if it were equally distributed to every single Indian, that would make only a marginal difference to average to per capita personal consumption—not by more than one-fourth over the last 35 years.

Even a casual visitor, coming at the initial and terminal ends of this period, would observe that distribution of such consumption has been neither equal nor equitable. One half of the population of the country has thus been plainly pypassed in the growth process. The cake as the Westerners call it, or the *roti* as we call it in India, would have to be much larger to discuss seriously the possibility of some of its supplies trickling down to the overwhelming majority of those below the poverty line. The overall growth has been plainly too low. And much of it has been diverted to capital formation and development expenditures.

Growth of Inequality in Personal Income

We can use national accounts data to ascertain the direction of change in the distribution of personal income. As is well known, personal income is an entity larger than personal consumption. Personal savings, personal taxes, corporate profits, corporate savings and social insurance contributions have to be added to personal consumption to arrive at personal income. These items have increased in real per capita terms nearly 400 per cent between 1950 and 1980, or some 16 times more than the 24 per cent expansion in *per capita* personal consumption.

We do not have adequate data to say with certainty in which income groups this difference between consumption and income originates. However, with the unequal income distribution that we have, it will be suprising if most of this difference originated anywhere else except in the top 10 per cent income bracket.[8] This group accounts for some 70 million persons, or say 15 to 16 million families. These are the families whose incomes rose during the last 30 years. The increments in their incomes were saved and then invested, profitably or otherwise, and reluctantly paid as direct taxes to the government when they could not avoid it (not to mention what was held back as "black money"). If therefore most of the estimated personal savings, profits and direct taxes is added to the consumption expenditure of the top 10 per cent of the population, it would seem that its share in national output would have increased from 40 percent in 1950 to over 50 per cent by 1985.

In consequence, the top 10 per cent has absorbed as much as two-thirds of the entire increment in personal income with the remaining 90 per cent getting the crumbs of a mere one-third of the total. This is an advance in reverse gear towards the reduction of inequalities—indeed a highly perverse performance, which is crying out for more than a few inanely lamentable explanations!

These have to be treated as illustrative magnitude. No precise data could give them greater precision. But even as orders of magnitude they are quite revealing.

India had set a Socialist pattern of society as its goal. After thirty-five years of planned development, we have a picture of income distribution which is not very much different from that prevailing in several countries. For instance, the comparable proportion was over 50 per cent in Brazil, Mexico and Peru and in a large number of countries in Africa.[9] One might sadly add that these countries have at least one saving grace. They never climbed the rostrums of power and proclaimed that reduction of inequalities of income was their principal objective. There is a clear gap between the goals we set and the results we achieved. This asymmetry questions both our efficiency and our intentions.

Concentration of Wealth and Economic Power

The present state of data makes it virtually impossible to answer the key question: how has concentration of wealth, particularly reproducible assets, changed over the last 35 years. But let me try to give some approximations. As described above, the relative share of the top 10 per cent in national output had increased from about 40 cent in 1950 to over 50 per cent by 1985, or by at least 10 per cent. But it is precisely this group which has been responsible for nearly all the savings—both private and public (through taxes and loans). It is the only group which could have thus added to its ownership of wealth. When this process has gone on for 35 years, it is obvious that most of the private reproducible assets are owned by this group.

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[8] For details on the distribution of the incidence of taxation, see A. P. Gupta, *The Rich, The Poor, and the Taxes they Pay in India*, Working Paper WEP 2-23/WP 12 (ILO, Geneva, 1975), p. 47.

[9] The share in Brazil of the top 10 per cent of the population in its GNP was 45 per cent in 1960, and 54 per cent in 1975. See Latin America, *Economic Report*, Vol. VII, No. 31, August 10, 1970; p. 248. For data on other countries, see J. Laicaillon et al., Income Distribution and Economic Development.

The All-India Debt and Investment Survey (1971–72) published by the Reserve Bank of India has given some details on the subject.[10] It concluded that 20 per cent of the rural households each having less than Rs. 1,000 of assets accounted for less than 1 per cent of all rural assets. At the other extreme 4 per cent of the rural households each with assets of Rs. 50,000 or more owned over 30 per cent of the total.

Now let us look at the other extreme, the concentration of corporate property. The Draft Five-Year Plan for 1978–83 stated: "It is well known that the concentration of corporate property has increased during the last decade."[11] It gives the assets of the top 20 businesses houses in the country. These increased from Rs. 25,000 million in 1969 to Rs. 54,000 million in 1977, or more than doubled. Among these 20 houses two stand out—the Tatas and the Birlas. At the time of independence Tata's assets were worth Rs. 400 million. By 1977, they rose to Rs. 10,690 million. Birla's assets were Rs. 250 million in 1950; by 1977, they increased to Rs. 10,700 million. A small snap-shot of reality, yes; but by no means impertinent!

We may now contrast the two sets of pictures. As pointed out above, each of the 20 per cent of India's 20 million of rural households had assets under Rs. 1,000. One would not be very wrong in assuming that the average for each of them was say Rs. 500. On this assumption, then, around one hundred million of India's citizens in this group would have had total assets, both productive and non-productive, amounting to no more than a grand sum of Rs. 10,000 million in early 1970's.

Putting the two images together, it would seem that the assets owned by the House of Tatas and the House of Birlas in the early 1970's would have exceeded by far all the assets owned by 100 million Indians, or one-sixth of India's population. The assets owned by the 20 top business houses would then be at least over three times as high as all the earthly possessions of 100 million Indians. One may add here that the assets of business houses, in contrast to those of the rural poor, are all income-generating productive assets. Quite clearly, the concentration of wealth and attendant with it an even such greater centralisation of economic power has increased quite considerably.

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[10] The Reserve Bank of India, *All India Debt and Investment Survey* (1971–1972).

[11] The Planning Commission, The *Second Five-Year Plan*, New Delhi. In contrast, the First Five-Year Plan, an impressive document in double format running to 671 pages, barely touched upon the subject of income inequalities and their reduction. It did stress the importance of a simultaneous advance towards reducing the concentration of income on the one hand and improving the well-being of the poor on the other (page 8). But nowhere in the long document, the reduction of inequalities appears as a central objective. Indeed, the 10 page Index at the end of the document referring to some 600 entries does not find it even necessary to mention the words "inequality of income and wealth.

Let me try to summarize this highly fragile and imprecise, but very eloquent, evidence on the changes in the distribution of personal consumption and personal income and of reproducible assets and economic power. One would have wished that the Planning Commission and the various departments of the government would have established over the last 35 years some kind of institutional mechanism which developed concepts, initiated the collection of statistics, described and analysed them, and set and appraised the targets achieved. But unfortunately that has just not yet happened. One can only sadly conclude that the points of omission as well as commission reflect powerfully the present priorities, given the economic balance of power in the country.

The developments concerning the reduction of inequalities of income and wealth over the last 35 years could be summarized with bare simplicity. First, the increase in per capita consumption since 1950—a mere 24 per cent—is so miniscule that the heat and intensity of the long and persistent debates about its equitable distribution appear all too much out of proportion. Second, we have moved backwards in reduction of inequalities of income—the top 10 per cent has by 1985 raised its relative share in personal income from around 40 per cent in 1950 to over 50 per cent in 1985, generating for itself over two-thirds of the entire increment in personal incomes. And finally, if public fixed capital formation is excluded, the top 10 per cent accounted for nearly all of the private capital formation, with the "wretched" of this land—the 90 per cent of population—being left in 1985 pretty well where they were in 1950.

One would certainly like to know why such a perverse outcome has come about? I would like to suggest that the compulsions of domestic, economic and political power are responsible for this negative outcome. India's plan model rests on the quantitative framework of a consistency model. The model describes the economy in terms of a set of relationships between different sectors, and, in a somewhat weaker sense, their movements over time. Gross national product, income, consumption, investment and output of several important individual items figure prominently in these relationships.

But the Plan model has not incorporated a reduction of inequalities as an integral part of its quantitative framework. There could not therefore be any attempt to derive consistency relationships as to whether a given set of policies is leading towards reduction of inequalities or not.

Perhaps it would be helpful if we examined how the question of reduction of inequalities was considered at the very beginning of planning in India. The Second Five-Year Plan devoted a special section to the reduction of inequalities.[12] Drafters of the Plan were concerned that the past experience of economic development in other countries was more often than not associated with growing inequalities of income and development. It therefore underlined that the problem was to plan the alignment of productive resources and of class relationships in such a manner as to bring about together with the growth of income also a reduction in economic and social inequality.

It recognized that the development along these lines "has not so far been attempted on any significant scale under democratic conditions". Historical parallels were missing. But it was stated that the problem had to be squarely faced, and this "will call for a great deal of flexibility and experimentation in the matter of techniques".

There was at the same time an underlying worry. The Second Plan concluded: "On the other hand, regard for democratic and orderly change cannot be allowed to become a sanction for existing or new inequalities." From then the Plan document gets lost in trivialities. One would have expected that the Plan would outline bold measures aimed at this objective. Instead, the only measures that were listed were some changes in income tax, taxation of wealth, improving yields from estate duty, ceilings on incomes, and removal of regional disparities.[13] But it warned that "a ceiling on incomes is, in other words, the end product of a process; it cannot be the beginning." Any change in the ownership of income-generating assets did not even merit a mention in this catalogue of techniques to be followed.

This lack of an integrated framework, this absence of political will has continued to guide the Plan formulations in the subsequent period. The results were what was to be expected. Some 20 years after the Second Five-Year Plan, for example, the revised Draft Five-Year Plan (1978–1983), published in December 1979, could even boast of devoting a special section to "distributive justice".[14] It underlined "some fundamental failures" and the need for "a reappraisal of development strategy" to achieve the "most cherished goals of the achievement of full employment, the relegation of poverty and the creation of a more equal society".

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[12] The Planning Commission, The Draft Five-Year Plan for 1978–1983 (New Delhi), Vol. I, pp. 3–7.

[13] *The First Five-Year Plan* had some casual remarks on the subject. It abruptly concluded: "It is, in other words, through the adaptation of tax system along lines mentioned earlier and through institutional changes which place an increasing proportion of the community's surpluses directly in the hands of the public authorities that an effective reduction in the incomes and the spending power accruing to the few can be brought about." This casual approach has continued to permeate all the subsequent Plans.

[14] The Planning Commission, Revised Draft Five-Year Plan (1978–1983, New Delhi, December 1978), pp. 7–8.

But was there really any reappraisal of the strategy? The Draft Plan's suggestions merely reiterated measures which were in substance not much more than a poor copy-script of what the Second Five-Year Plan had already written over 20 years ago. The Seventh Five-Year Plan has simply resolved this question by abandoning the whole idea of reduction of inequalities in income, wealth and economic power. It has now centered attention instead on "the poverty line". It can, however, be hardly imagined that social conflicts among classes of our people about the distribution of the gains of growth will be abolished by such an omission, whether purely editorial in nature or politically motivated.

IV. Towards the Twenty-First Century

The picture painted above is decidedly in sombre colours. Despite notable advances, India has regressed in relative terms during the last 35 years—within the community of nations. And within the nation itself, the inequality of income, wealth and economic power—particularly the last—has increased sharply. Instead of catching up with the early starters, India has fallen behind. We are beginning to learn to live with the India we have got, rather than begin afresh to search for the India we want.

Our growth rate has been just plainly too low. It is not that somewhat targets were not set. In fact, it has been a consistent feature of our planning that each new Plan had set the target around 5 per cent of growth per year; and just as consistently, the achievement had always hovered around 3.5 per cent, or 30 per cent lower than the target set. We have so far been trapped in the twin syndromes of 5 per cent target and 3.5 per cent performance.

Let me give you a simple calculation of the losses suffered by the country through such persistent shortfalls in the achievement of the targets set. At a rough guess, they would come in real terms to some 30 times the total national income of 1950, and 8 times that of 1985. They would amount to as much as one and a quarter times the entire volume of real gross capital formation in the countries which have often been blamed for the losses suffered through the declines in their growth rates.[15] But surely good conscience requires that we direct the same search-light on our own performance.

If this under-achievement had not taken place, India's total output in 1985 would have been 5.5-fold the 1950 level rather than the 3.6-fold we actually achieved. With that much additional output we would have been better poised to accelerate our rate of growth and at the same time to achieve considerable improvement in the level of living of our people, including a reduction in inequalities.

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[15] Shrimati Indira Gandhi, delivering as the Prime Minister of India in 1983 the Raul Prebisch Lecture at Belgrade (8 June, 1983), entitied "Peace and Development", had stated that as a result of the fall in the growth of GNP in the industrialized countries from 5 to 2 per cent per annum "in five years the affluent countries have lost an extra income of 12,000 billion dollars."

In this context, I have always been struck by the quite considerable debate which usually surrounded the formulation of each new development plan. The central subject of attention were always the financial size of the Plan, the volume of resources—both internal and external—to be mobilized, and the difficulties of doing so. And yet, it is striking indeed that when each Plan was over, with the ever so usual shortfall of the target by nearly 30 per cent, there was not even a murmer of protest asking for an explanation of such persistent under-fulfilment. Nor have the relevant authorities ever taken up this question for a forthright analysis in the dozens of reports issued by them on Plan fulfilment. One wonders what would happen if an enterprise, private or public, continued to suffer such high cumulative losses !

While we have lagged behind other countries and let such inequalities grow unchecked, the world around us has vastly altered. We may look at some of the landmarks of this momentous transformation.

It may be useful to review here quickly, but rather briefly, the growth path of a few countries, in both the socialist and the capitalist camps, which experienced tremendous spurts in the last few decades. Within 20 to 25 years, these countries raised their total output 5 to 6 times and their per capita output 4 to 5 times. Their overall growth rates ranged from 7 to 10 per cent per year. With such a giant leap, they narrowed significantly the economic distance that separated them from the advanced industrial countries. The Soviet Union, China and several countries in eastern Europe, Japan, Korea and Brazil serve as some of the examples of such economic spurts sustained for over 20 years. Since more or less comparable data are available for Japan, Korea and Brazil, I have summarized them together with those on India in the table below.

Country	Period	Annual growth		Increase over 1950	
		Total	per capita	Total	per capita
		(in per cents)		(in per cents)	
Japan	1955–75	10	9	573	460
Korea	1960–80	9.4	7	503	387
Brazil	1960–79	8.3	5.4	395	186
India	1960–79	3.65	1.45	105	38

Source: United Nations, Statistical Yearbook, 1981.

The capitalist industrial centre of the nineteenth century, limited to a few countries with less than 250 million people and mainly dependent on private capitalist enterprise, has expanded to embrace over 1,000 million people. In the process, it has gone through a qualitative change in the systems of social management. The dreams of socialist thinkers of the nineteenth century, dismissed as impractical utopias, have by now given rise to the socialist industrial centre embracing nearly 1500 million people and accounting for from one-third to two-fifths of the world industrial output. Even in the so called capitalist countries, the public sector earlier limited to lighting city street lamps and making wars and signing peace treaties, has expanded beyond capitalist imagination. It has come to account for as much as one-half of national expenditures in Western Europe, and nearly one-third even in the United States. Japan broke all the growth records. Following the bold call in mid-1950s by the then Prime Minister Ikeda, Japan experienced an unparalleled process of growth, which saw its national output jump nearly seven-fold in just two decades. Some have considered it to have set an exemplary pattern of combining some of the advantages of private capitalism as well as of public control of private enterprises.[16]

Our record—both in growth and in equity—stands in dismal contrast. Before we are carried away by certificates of achievement, handed out from abroad, there is need for a pause for serious reflection!

We do not have to be jealous of those countries which have done better than we have. We can be generous and wish them well—even for the future. On the other hand, generosity need not so blind us that we do not even raise the question why they have done better and we have lagged behind? Why did we not have such a spurt even for just 10 years? Why have they achieved in just twenty years what we have failed to do even in fifty? These questions must be faced, both by India's political leadership and by its scholars.

We may attempt here to give a balance sheet of some of our strengths and weaknesses. We are not poor in resources, but have we used them efficiently? We have been the leader of the Green Revolution, but why has it not spread fast and far enough? Why is our yield even of wheat still no more than only one-third of the average in so many countries? We have established a solid base for the capital goods and the engineering industries; but why have they not advanced much more, and why some of them work with so much under-capacity?

We have raised the level of capital formation from under 10 per cent to over 23 per cent of our GDP, and thereby eliminated one of the main reasons for slow growth; and yet why the growth rate has remained stubbornly so low?

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[16] Reflecting upon the manner of management of the Japanese economy, Ohkawa and Rosovsky remarked in their classic study: "Japan retained some advantages of capitalism, i.e. efficient producers, while retaining certain benefits of socialism, i.e. considerable public control of the economic effort and direction." See Kazushi Ohkawa and Henry Rosovsky, Japanese Economic Growth: Trend Acceleration in the Twentieth Century (Stanford, California, 1973), pp. 225, 232.

We have raised our skill profile particularly at the higher levels even faster than Japan; and yet why does it yield—like our much-maligned low—such poor returns in terms of output? Our scientists and technicians are justly famous all over the world; and yet why their role is so marginal in new capital formation?

We have established a highly sophisticated system of laboratories spread all over the country, specializing in nearly all the branches of modern knowledge; and yet why do they hover only on the margin of the needs of the plants and installations newly being established? We have among the most famous economists whose names are known all over the world, whereas none of us can recall the names of any of the economists from Japan, Korea, Brazil, USSR or China who might have masterminded the swift spurt of their economies; and yet why have their undoubted talents of our economists not helped raise our rate of growth by even one percentage point?

We can go on adding to this already long list of our strengths and weaknesses. Each one of us can add one's own specific points. But that is hardly necessary.

These questions are crying out for answers? I do not wish to pretend that the answers are simple or that I have the answers. But it hardly needs to be underlined that these questions must be faced in any search for the answers.

As we move towards the end of this century, let us try to visualise how our country would have changed when the clock strikes the hour of midnight on 31 December 2,000. How different that India will be? How much will it approximate to the dreams with which Panditji raised the tri-colour on the Red Fort on 14–15 August 1947, and announced to the nation awakening to Independence, "the tryst with destiny".

We cannot clearly anticipate now the scene as it would unfold at that time. But an attempt may be made on the basis of the targets set by the Seventh Five-Year Plan (1985–1990) and the development perspective up to the year 2000 outlined in it.[17]

The Seventh Plan opens with a reasoning assessment. The Indian economy, it states, "has moved to a *higher* growth path" (italics added). The Sixth Plan target of 5.2 per cent growth was achieved mainly because of good agricultural performance and a rapid growth in the services sector. But growth of mining and manufacturing and exports was one of the weak points, with their growth remaining "well below the target". But the Seventh Plan is built on the "strengths inherited from the past—the high rate of savings, the large pool of scientific, technical and managerial manpower, the resilience against drought and international disturbances and the orientation of development efforts to benefit the poor." The Planning Commission concludes on a note of confidence: "It is now possible to move faster towards the objective of self-sustaining growth with social justice"[18].

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[17] The Planning Commission, Seventh Five-Year Plan: 1985–1990 (New Delhi, October, 1985), Chapters I and II.

The Seventh Plan devotes a whole chapter to "Development Perspective: Towards the Year 2000" (Chapter II). Taking into account the basic goals to be achieved by the year 2000 and the resource base, the Planning Commission simulated, using a mathematical model, several alternative development scenarios with a view to optimising the attainment of a mix of objectives. Let us examine how the profile of development finally chosen would help towards the attainment of high and steady growth and reduction of inequalities.

The growth path for 1985 to 2000 postulates target growth rate of 5 per cent. With minor variations there was, however, the same average growth rate for all the preceding Five-Year and Annual Plans; for example, 2.1 per cent in the First Plan; 4.5 per cent in the Second Plan; 5.6 per cent in the Third Plan; 5 per cent in the Annual Plans; 6.7 per cent in the Fourth Plan; 4.4 per cent in the Fifth Plan; and 5.2 per cent in the Sixth Plan. We are now told that the target rate for the next 15 years is also to be just 5 per cent, or the same as the average for the last 35 years. It is therefore difficult to accept the assurance of the Planning Commission in the very opening sentence of the Seventh Plan that we have now moved to a "higher growth path". We have in reality not moved even one percentage point upwards! Our to-morrows still continue to be cast in the iron framework of our yesterdays. We remain prisoners of the 5 per cent target syndrome. The much needed spurt in the Indian economy is simply not on the official agenda for the next 15 years.

However, are there any strong reasons to believe that in contrast to the past pattern of 3.5 per cent performance syndrome, the target will in fact be attained this time? The target rate for the next 15 years depends on several crucial assumptions: 1. annual industrial growth at 8–9 per cent, or twice the figure for the last 15 years. This target may be even more difficult to attain than in the past since the focus in the Seventh Plan has been shifted away "from massive investments in new facilities to capacity and productivity enhancing improvements in existing facilities."[19] Moreover, the current tilt of policy in favour of domestic private capital and external transnational corporations could easily backfire even in terms of industrial growth, since the public sector will no longer function as the powerful engine of industrial expansion.[20]

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[18] Ibid., pp. 1, 4, 7.
[19] Ibid,, p. 24.

We are thus placed in a peculiar situation in which an acceleration of the industrial growth rate is projected without strengthening the levers with which it can be achieved. Similarly, exports are projected to grow at 7 per cent. A breakthrough in export earnings is "a key element" of the foreign trade and balance of payments strategy.[21] This is coupled with a decline in the rate of growth of imports to 5.8 per cent per year. The target of export expansion could easily be defeated by a weakening of the world economy, and that of reducing import rate by our own policies of import liberalization. With an expected sharp rise in debt service obligations, the external borrowings programme of Rs. 20,900 crores and uncertain remittances, we could land any time in the midst of severe balance of payments strains—self-invited or not—leading to a curtailment of the development effort.[22]

Despite the past experience of consistent shortfalls in attaining the targets set, we may assume that the target rate will be attained in the future. Even then, our relative position in the world economy will not be improved unless we were to assume at the same time that other countries will have a growth rate substantially lower than ours. This, however, could adversely affect our export prospects and thereby our growth possibilities. By the dawn of the twenty-first century, we may not have recovered the ground lost over the last 35 years, if the world economy grows at around only 3.5 per cent per year. It is difficult to see why the rest of the world will oblige us by growing slowly. The planned growth for the next 15 years will not thus reverse the built-in regression of India. No catching-up, but continuing falling behind the world economy.

Let us see how the official development perspective will affect the other main objective: the reduction of inequalities. I would like to quote a tiny sentence of only 33 words innocuously tucked away in the middle of paragraph 2.84 of the 13,000 words long Second Chapter of the Seventh Plan. It reads:

> "The most significant impact will be on the extent of poverty: the percentage of people below the poverty line is expected to decline to a level of 5 per cent in the year 2000."

Since the level in 1985 was as high as 37 per cent, I would have thought this could certainly be the most promising news item for the 250 million of our people who are still condemned to be below the poverty line. It would have won banner headlines in the national press. It is difficult to appreciate why it was hidden inside all other verbiage of the Second Chapter. It may well be that it was on afterthought about which the Planning Commission itself had some serious reservations.

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[20] K. N. Raj, "New Economic Policy" (V. T. Krishnamachari Memorial Lecture: 20 November, 1985, Mimeo.), p. 28.

[21] Ibid., pp. 62–65.

[22] V. Anstey, op. cit., p. 487.

Being an optimist by temperament, I would have liked to see this item played up. After all, by reducing the poverty line to below 5 per cent of our population, we would have set an example for even several highly developed countries, such as the United States, Great Britain and most of Europe, where the proportion of their people below their poverty line has stubbornly stayed at over 10 per cent, and in several countries over 20 per cent. The whole world could indeed come to us to learn how we were able even to think of performing such a near-miracle by 2000.

The hesitant manner with which this whole point has been played down by the Planning Commission may perhaps suggest that the so called achievement may be more a statistical gimmick than reality. Maybe our "poverty line" has been fixed at a level relevant for some distant year in the 1960s or the 1970s. And it has steadily been kept there. Any rise of income, even when very unequally distributed, will therefore induce, automatically, a downward statistical movement in proportion of people below our poverty line. But the "poverty-lines" in other countries generally change over time not only in line with prices but also with real incomes. Keeping it fixed at one point in a growing economy merely enlarges the image of achievement. Perhaps an awareness of the limitations of such "development by definition" may have restrained the Planning Commission from being euphoric on this point!

The fixed "poverty line", however, is not the main point at all. By concentrating exclusively on the "poverty line", the Planning Commission has wholly abandoned the question of reduction of inequality of income, wealth and economic power. These phrases have simply disappeared from the massive document (except for an inadvertent slip on p. 45, where the phrase "the expected improvement in income distribution" is cited as an explanation of a higher weightage given to food consumption). This disappearance also marks the disappearance of several other phrases, such as inequalities of wealth and economic power, and socialism, socialist pattern of society, or transition to socialism.

Even if our once-for-all fixed "poverty line" were to disappear completely as a statistical phenomenon, it might have no impact on the unequal distribution of income, wealth and economic power. In reality, the disappearance of the "poverty line" and a sharp accentuation of inequalities could both proceed simultaneously. It is in this light that the changes introduced by the New Economic Policy (NEP!) will obviously strengthen the command of the top 10 per cent over income flows. It will thereby act as a built-in promoter of still greater inequalities of income, wealth and economic power in the future. Thus, the disappearance of certain phrases such as inequalities or socialism might reveal the ideological content of current thinking. But changing names or omitting certain phrases can hardly be expected to change reality.

The India which will be entering the twenty-first century will be a much more unequal India than what we have now. I do not have to be apocalyptic to underline that that India will be unable to avoid increasing social conflicts about the distribution of the gains of growth.

For some of us of the older generation, these new departures create grave concerns for the future. Panditji had been the architect of our dreams, no matter how confused they might have appeared at that time. We had learned to hope that India could be the country where the vast upheavals caused by the two great revolutionary traditions in human history could find the experimental ground for their convergence, their eventual merger into a new tradition. As we all know, these two traditions are: first, flowing from the Dutch, English, American and the French revolutions, and Second, the egalitarian socialist tradition flowing from the Soviet, Chinese, Yugoslav, Cuban, Algerian and Nicaraguan revolutions.

The latter was the lineal descendant of the former. But the dogmatic ideologies of both the extreme right and left have made it difficult to seek a synthesis for orderly social transition. Of all the countries in the world, India is most suited to contribute to this synthesis.

India had already acted as a melting pot of cultures in its earlier history, as Gurudev Rabindranath so forcefully expressed it in his immortal words:

> Hetha je Arya, hetha Anarya
> Hetha Dravida, Chin
> Shak, Hun dal Pathan Mogul
> Ek dehe holo lin.
> Aiyi Bharater mahamanaver sagar tire.

The inescapable conclusion then is that the end of this century will see practically no improvement in our relative position in the world economy. There may in fact be a continuing regression—a perspective which can hardly be considered as acceptable under any circumstances. Nor will there be any improvement in the highly unequal distribution of income, wealth and economic power inside the country. Most likely, there will indeed be a sharp deterioration in it. When the requiems for the twentieth century India will be written, its overtones will have to express this dual regression—within the world community and inside the nation itself.

We could certainly do much better. There is still time before the dawn of the twenty-first century. We could have a Hanuman leap in our rate of growth. We could raise national output at 10 per cent a year, quadrupling it in 15 years. We could expand investment to 30 per cent and public consumption to 15 per cent of national output. We could raise per capita income nearly threefold, and per capita personal consumption by over two-thirds.

We could combine this growth perspective with an active policy of redistribution of income, wealth and economic power. We could treble the consumption of the 40 per cent of our people in the lowest income brackets, raise that of the middle 50 per cent to one and a half times, and hold that of the upper 10 per cent to a 10 per cent increment—an increment nonetheless in what is widely regarded as obscenely wasteful level. The emerging pattern of consumption will have to match the planned increments in supplies of goods and services. These targets would reverse the process of our regression in the world economy, reduce inequalities inside the country and set us on the path to the India the people want. But that needs an altogether different strategy calling upon our people for an unprecedented participation in a war against backwardness and poverty.

All this can be done. An acceleration of the growth rate and an actively egalitarian policy are not really new inventions, or even innovations. Several other countries have already done it before us. The crucial first question for the leadership at the highest political level is not "How can it be done?" It is: "Why can it *not* be done?" What is so specially wrong with us that we cannot do what so many have already done? It is worth learning why not, so that we may have fewer declusions.

We can take counsel of the best talents in the country. We can have an open national debate, as we never had since the Mahalanobis Plan-Frame was launched. If at its end the conclusion is that a 10 per cent spring for 15 years is plainly impossible for us, we can settle for a more modest target of 7 per cent—still 40 per cent higher than the official expectations for overall output, and 66 per cent higher per capita income. Not a Hanuman leap, but a leap nonetheless.

Even if we do not do this, there will still be the dawn of the twenty-first century. But it will be a false dawn, a dawn of wrecked dreams, deceived hopes, uncertain scholarship and faltering leadership. It will leave our country open to the threat to our national security, independence and integrity from within and without.

I see no better way of concluding my analysis than by citing the passionate words with which 56 years ago Professor Anstey ended has famous work, *The Economic Development of India*. She wrote in conclusion:[22]

"India is crying out for the persistent and unstinted efforts of her people—male and female—inspired by a clear vision of the potentialities of the future, unshackled by bitter and unavailing reflection upon the past, to help her to loosen the bonds of tradition, caste and superstition. Thus and thus only will she attain her rightful position as a free—and free internally, not only externally—and prosperous member of the Commonwealth, not merely of the empire but of the nations of the world."

India is still crying out. But, is there anybody listening?

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THE ROOTS OF INDUSTRIALISATION STRATEGY IN INDIA : 1949-56

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Introduction

Recently, Deepak Lal (1983) has made an attempt to assess 'the analytical claims of dirigiste panaceas in four important debates on development'. Two of these debates are concerned with the role of foreign trade in promoting economic development and the role and the appropriate form of industrialisation in developing countries. In the course of his discussion, he propounds the following thesis:

(A) "The second category of countries accepted the pessimism about trade prospects and set about breaking the foreign-exchange bottleneck by reducing the import content of domestic production and consumption through direct control of imports and inducements for import substitution, regardless of the real resource costs to their economies. India was a prime example". (Lal, 1983: 25).

(B) "But, at least for this Indian, it stands as a lasting and appalling monument to the ideas of Nurkse, Prebisch, Singer, Myrdal, Balogh, et al. (Lal, 1983: 31).

In other words, Lal has argued that

(a) Import-substitution industrialisation was bad for India; and
(b) It was imposed on India by bad advice of outside (mainly Western) development economists.

John Toye (1987: 91) has already questioned Lal's second thesis. He argues that:

> "Thus, even if all the historical evidence had been destroyed, it would strain credulity to believe that the post-independence economic policy was derived from the writings in the early 1950s of a few development economists, such as Singer, Prebisch and Nurkse".

Thus, the purpose of this paper is to examine Lal's thesis and to go a little further into this than Toye: What were the roots of the industrialisation strategy in India adopted in the fifties as the basis of the first two Indian Five-Year Plans? Was it justifiable when seen in the context of that period and not ex post facto?

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2. The Historical Factors

From the mid-19th century, Indian nationalists started advocating a 'Boycott' of British goods as a means for reviving Indian industries, which had been ruined by British commercial policy in India. During this period, as Bhagwati and Desai (1970: 24) point out, 'the process of import-substituting investment started in cotton textiles'. In 1872, Justice M.G. Ranade popularised the idea of 'Swadeshi', i.e. indigenous, of preferring the goods produced in one's own country even though they may prove to be dearer or less satisfactory than finer foreign products. Boycott of Lancashire cloth was again preached in the second half of the 1870s in response to the hostility of Lancashire to the newly started Indian mills in Bombay. In 1876, Dadabhai Naoroji published his magnum opus, *The Poverty of India.* In this work Naoroji presented 'the drain theory'. Almost simultaneously, Justice Ranade and R.C. Dutt also stressed the drain theory and propagated it. Many other Indian leaders joined in the agitation around the question of the drain. The essence of the drain, as explained by R. C. Dutt, was that:

> "If manufactures were crippled, agriculture over-taxed and a third of the revenue remitted out of country, any nation on earth would suffer from persistent poverty and recurring famines".

Thus, the central point of the Drain Theory was that a portion of the national product was not available for domestic consumption or capital formation and was unilaterally transferred to England for political reasons, first in the form of an outward flow of bullion and later in the form of unrequited exports and unequal exchange.

In 1883–84, the boycott of British goods was ardently preached during the agitation against the Ilbert Bill of 1883. In 1891, it was again preached and practised by the opponents of the Age of Consent Bill. All these developments ultimately resulted in the beginning of the 'swadeshi' movement in the course of an all India agitation against the partition of Bengal in 1905. In this way, the 'boycott' became the negative aspect, and 'swadeshi' became the positive aspect of the same idea.

One of the most persuasive arguments used by the Indian nationalists to popularise 'swadeshi' was that since the Government had refused, because of its subservience to the British manufactures and its belief in the doctrine of free trade, to give the sorely needed protection to the infant industries of India, the people themselves must undertake to provide this protection through a vigorous 'swadeshi' movement. Its success had to depend on the self-effort and self-reliance of the people. In his Congress Presidential address, S.N. Banerjee put forward this view most clearly in 1902: "If, however, protection by legislative enactment is impossible, may we not, by the fiat of the national will, afford them such protection as may lie in our power".

Thus, the 'swadeshi' movement regarded the revival of indigenous (Swadeshi) industry as essential. It was realized that these industries, being at their infant stage, could never grow in the face of free competition with foreign countries which had highly developed industries. Far from helping the nascent Indian industry by protective duty, the British pursued an extreme free trade policy and, under pressure of the Lanchshire producers, even imposed excise duty on cotton goods manufactured in India in order to cripple the Indian cotton industry. Therefore, it was felt that the Indian industry could stand on its own feet only if foreign goods were deliberately shut out by a policy of boycott. But the 'Boycott' movement could not succeed unless the essential goods, hitherto imported, could be produced in India. Thus, the two proposals, namely, refusal to buy foreign goods and the promotion of indigenous industry, were indissolubly bound together. From then on (1905) the 'freedom struggle' centered round these two aspects of the 'swadeshi' movement—Boycott and Swadeshi. Significantly, the campaign to substitute Indian manufactures for imports was also calculated to reduce the drain or outflow of Indian wealth consequent upon the import of foreign manufactures.

The political counterpart of this economic 'swadeshi' was 'swaraj' (self-government). Dadabhai Naoroji, in his Presidential address at the 1906 Congress, referred to 'swadeshism' as the 'cradle of New India' and defined the political goal of the Congress as 'Swaraj'. From then on the ideal of 'Swaraj' became the watchword of India. The 'swadeshi' movement started showing results as early as 1907. To quote D. R. Gadgil (1971: 253).

> "One of the first industrial movements having an all India significance was the general wave of optimism that pervaded Indian industry in 1907, the result in a large measure of the 'swadeshi' movement. Many schemes for starting various manufactures in India and for financing trade and industry were then floated".

In 1920, the special session of Congress at Calcutta adopted a resolution on non-cooperation and adoption of 'swadeshi' in cotton; and resolved to attain 'swaraj'.

Going even further back in history, emphasis was also given to economic independence by India's experience of the East India Company which came to India for trade and ultimately obtained political power. "Flag follows trade" was the most important lesson. This is reflected in the following statements:[1]

> "The principal objective of planning the national economy is to achieve national self-sufficiency as far as possible but not primarily for purposes of capturing foreign markets". *Jawaharlal Nehru* "... the basic principle of Planned Economy for India ... to meet primarily its own demand and not planned deliberately with a view to competing in foreign

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[1] Quoted from Chaudhuri (1985: 12).

markets . . . This in order to avoid all economic warfare or imperialism . . ." *All India Congress Committee, 1939.*

Thus, the 'swadeshi' movement combined with 'swaraj' is in fact the historical version of 'self-reliance'. And since independence the central point of India's economic policy has always been to attain self-reliance. In this way, in Indian development strategy the key word for 'import-substitution' strategy has always been 'self-reliance'. As Little (1912: 51) recollects:

> "When I arrived to work in India in 1958, the key words that were being bandied about in Latin America and the West, such as 'import-substitution', 'external economies', 'linkages', and 'structuralism', were never used. The key word was rather 'self-reliance' including self-reliance in capital goods. Thus, although India was in fact planning for almost total import-substitution whenever possible, in a highly structuralist manner, her planners, were not influenced by any import of these concepts."

This should make it clear that Indian planners independently developed and conceptualised their strategy the roots of which can be traced back to India's struggle for independence.

3. The Formative Period: 1949–56

Keeping in view this background of the independence struggle, the more precise and concrete theoretical and empirical foundations of India's economic policies were laid during the period 1949 to 1956. On the eve of this period, the following noteable features of the Indian economy need to be borne in mind:

1. Before the Second World War, India was a net debtor country and needed a surplus of a fairly large order in its trade accounts in order to meet the servicing charges on the sterling debt. This was the key to its commercial policy. But by the end of the war, almost the entire external debt of the Government was repaid and sterling balances of the order of Rs. 1600 crores had been built up. (This was equal to about two years of India's imports.) This obviated the need for a surplus on trade account. The magnitude of the external reserves accumulated during the War opened up, in fact, the prospect of being able to finance fairly large deficits in the balance of payments. (Planning Commission, 1952: 453–54).

2. The partition of India in 1947 "affected most the exports of jute, cotton, and hides. In the new set-up, large scale imports of these were essential for some of the largest established industries in India. But the commodities that could be exported to Pakistan in exchange were mainly processed materials like cotton textiles, sugar, and matches which, until partition, were receiving some protection against foreign competition in the areas which now constitute Pakistan. Partition therefore not only resulted in increased reliance on imported raw materials but made more difficult the problem of export promotion". (Planning Commission, 1952, 454).

3. Between 1938–39 and 1948–49, there was a movement in the terms of trade in India's favour to the extent of about 15%. Between 1948–49 and 1950–51 on account of external factors, including the Korean war, there was a further sharp improvement in India's terms of trade to the extent of about 22%. (Planning Commission, 1952: 64). This again reduced the pressure to export.

4. In the pre-independence period, the major emphasis in industrial development in India had been on consumer goods industries, while the development of basic capital goods industries had lagged behind. In the case of capital goods industries and industries manufacturing intermediate products, the available capacity in India in most cases was inadequate even for the existing requirements. (Planning Commission 1952: 42).

5. India had a very week infrastructure. There was very little industrialisation, and productivity was very low compared with the rest of the world. Trade relations with the outside world were very unfavourable with heavy dependence on the decision of the other trade partners. (Gupta, 1986: 24).

It was in this situation that planning started in India. The size of the First Five Year Plan (1951–56) was presented to be Rs. 1492.92 crores in the Draft Outline of the plan, significantly less than the amount which India was holding in its sterling balances reserves. The planning Commission (1952: 64) noted: "Considering that there was a surplus in balance of payments in 1950–51, this order of improvement on that base would suggest a fairly comfortable foreign exchange position by the end of the Plan". The Planning Commission (1952: 65) further stated that: "What has to be ensured is, on the one hand, that the development programme is so framed as to increase the potential exportable surpluses and decrease the import requirements of the country and, on the other, that the pressure on foreign exchange is kept within manageable limits." Thus the Plan was, in fact, 'outward-looking' in terms of neutrality of incentives as between domestic and foreign markets.

The second Five Year Plan (1956–61) was based on the two major models formulated by P. C. Mahalanobis. The essential logic behind the inter-temporal resource allocation of investible resources of this plan was based on the two-sector Mahalanobis model. The detailed sectoral allocations were based on his four-sector model. It was again Mahalanobis who, after frequent discussions with Jawaharlal Nehru, put forward the Draft Outline of the Second Plan, in his own name. Mahalanobis (1963) himself gave an excellent and detailed account of the various stages in the formulation of the Second Plan.

The gist of Mahalanobis' account is that he took advantage of his visits abroad to have discussions with distinguished economists and statisticians. In 1954–55, Ragnar Frisch, Oskar Lange, Charles Bettelheim, Richard Goodwin, D. D. Degtyar, I. Y. Pisarev, M. I. Rubinstein and P. M. Moskvin came to India in connexion with economic planning. Degtyar, Pisarev, Rubinstein, Moskvin and Lange gave a critical appraisal of the general approach and the final form of the Draft Plan-frame on the basis of their own experiences of socialist economies. But the Indian approach was 'different from theirs in certain important respects'. 'The aim of the plan-frame had been to seek an approach which would be suited to Indian needs and would be in accordance with the social and cultural traditions of India'.[2]

4. A Retrospective View

Planning in India started in 1951 under the leadership of Jawaharlal Nehru who continued to guide India's development strategy personally uptill the Fourth Five Year Plan (1969–74).[3] He was strongly influenced by the Soviet ideology of industrialization which included a theory and a programme aiming at a comprehensive industrial structure based on heavy industry. As in India, this type of industrialization was powerfully motivated by the desire to protect national independece and reverse the colonial pattern of industrialization which emphasized primary production for export and the emergence of a few consumption goods industries producing mostly for the home market.[4] In the back of his mind, as a leader of the independence struggle, Nehru constantly remembered the lesson that Indian independence had to have as an economic foundation the capacity to be self-sufficient; and, even more significantly, not to follow the tradition of the East-India Co. in that 'Flag follows trade,' i.e. Indian production should only be for the domestic market and not for the purpose of capturing foreign markets.

When Nehru entrusted the work of formulating India's development strategy to Mahalanobis, and engaged in close consultation with him, Mahalanobis, on the eve of the formulation of his model, visited the socialist countries and had close contacts with their economists. Like Nehru, he was also highly impressed with Soviet-type industrialization, with its emphasis on building up the capital goods base. Being physicist by training and a statistician by practice, he directly identified increased investment with increased availability of capital goods, which in turns he identified with domestic production thereof, ignoring foreign trade in particular.[5] In this way, he used his two-sector model to provide the rationale for a general shift in industrial investments towards building up a capital goods base. An extension of this model—Mahalanobis four-sector model—provided the basis for detailed sectoral allocations in the Second Plan. Thus the substance of Mahalanobis' models came from Russia; but the form in which his model was cast came from Keynes and Harrod-Domar. As regards any Western influence on the basic development philosophy of Mahalanobis, Little (1982: 50) rightly notes that: "In all this, there is no sign of the influence of Western economists." Even Lal (1983: 80) himself accepts that Mahalanobis independently formulated his model to provide a theoretical justification for industrial self-reliance through the promotion of heavy industry. This basic strategy of India's development, as formulated by Mahalanobis, was firmly followed at least during the Second, Third and Fourth Five-Year Plans, i.e. uptill 1974.

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[2] Mahalanobis (1963: 83). See pp. 26, 69, and 92 also.

[3] In fact, the guidelines of the Fourth Five Year plan were approved by Nehru just before his death in 1964. Indira Gandhi adopted his guidelines for the formulation of Fourth plan.

[4] For a detailed discussion of these points, see Myrdal (1968), Chapter 24.

[5] For an excellent discussion on Indian planning theory and techniques see Bhagwati and Chakravarty (1969).

All this left little room for the influence of Western development economists on the formulation of India's development strategy, apart from the influence of Keynes, Harrod-Domar and Colin Clark regarding the formal presentation of Mahalanobis' model. Nehru and Mahalanobis were the key persons for shaping India's development policy. Mahalanobis, independent of any outside influence, formulated the development strategy in his two major models by centering it upon the building of heavy industries as was repeatedly resolved by the Congress and other Indian thinkers during the 'freedom struggle.' India had to develop her own development strategy which had to be practicable under Indian conditions.[6] All those foreign economists with whom Mahalanobis had discussion 'refrained from giving any specific advice on question of policy'.[7] The basic decisions were taken by the Indian economists and statisticians only and exclusively on the basis of Indian needs and the socio-cultural traditions of India.[8]

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[6] "We went on thinking on our own lines, and I took advantage of my visits abroad to have discussions with distinguished economists and statisticians". (Mahalanobis, 1963: 3–4).

"We are speaking of India and suggesting methods which we think are practicable under Indian conditions". (Mahalanobis, 1963: 4).

[7] "I should like to mention that in the winter season of 1954–55 a number of distinguished statisticians and economists came to the Institute from different countries of the world . . . We profited much from our dicussions with these distinguished experts. They helped us to think clearly; they made constructive criticisms about the logical basis of our thinking; and they placed at our disposal their own rich experience; but, naturally, they refrained from giving any specific advice on questions of policy. The greatest benefit was that through contacts with such eminent experts from many different countries we gained confidence in our way of thinking. The basic decisions naturally had to be taken by the small group of Indian statisticians and economists who were working on the plan frame." (Mahalanobis, 1963 : 6–7).

[8] "Academician D. D. Degtyar, Professor I. Y. Pisarev, M. I. Rubinstein and P. A. Moskvin of U.S.S.R. and Dr. Oskar Lange of Poland gave a critical appraisal of the general approach and the final form of the Draft Plan-frame on the basis of their own experience of socialized economies. Their comments and observations were of great help to us although our own approach is different from theirs in certain important respects. The aim of the Plan-frame has been to seek an approach which would be suited to Indian needs and would be in accordance with the social and cultural traditions of India." (Mahalanobis, 1963: 83).

Further strengthening this tendency towards import substitution, there were certain economic facts. On the eve of planning, India had a huge reserve of sterling balances and was able to finance fairly large deficits in the balance of payments. India had a fundamental structural weakness in her dependence on imports of capital goods which was to be corrected within the shortest period.[9] This was further necessitated by the fact that due to the partition of India, the problem of export promotion in India's natural and traditional exports became more difficult mainly because of the increased reliance on imported raw materials for such traditional industries, e.g. jute and cotton. But on the other hand, India had plenty of natural resources for the development of capital goods industries.[10] Thus, in these situations, the proper strategy for India was to bring about a rapid development of capital goods industries. As regards meeting the initial total requirements for import of capital goods, Mahalanobis (1963: 115) felt that: "This must be met partly by increased production of food-grains, sugar, cotton and petrol; partly through foreign assistance and withdrawal from sterling balances; and by curtailment of non-essential imports and promotion of exports in every possible way." The idea of import licensing was implied in the distinction between essential and non-essential imports, but exports promotion held equal rank with the curtailment of non-essential imports.

In this way, in India, development was identified with industrialization; and industrialisation was identified with development. Thus it was explicitly stated in the Second Plan that 'rapid industrialization and the diversification of the economy' is the 'core of development.'[11] The aim was to make India independent of foreign imports of producer goods as quickly as possible.[12] Therefore, the development of capital goods industries was considered to be the core of industrialization and development. This automatically meant the adoption of an import-substitution strategy since capital goods were imported in India. Thus, import-substitution started with capital goods. The criticism of import-substitution industrialization advocated by Western economists (Prebisch/Singer, Nurkse/Lewis, etc.) is precisely the opposite, i.e. that their import-substitution strategy started with consumption goods, and hence led to a dead end/impasse because of the need for foreign exchange for capital goods and other inputs into the import-substituting industries.

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[9] "India's present dependence on imports of capital goods is a fundamental structural weakness which must be corrected as quickly as possible. It would be obviously more economical from the national point of view to produce in India as much heavy machinery as possible because this would ensure a supply of capital goods which would make India increasingly independent of imports and would strengthen India's position in the world market." (Mahalanobis, 1963: 69).

[10] "India has plenty of iron ore, coal and other natural resources. The long-term aim should, therefore, be to manufacture capital goods within the country rather than to import them. The proper strategy would be to bring about a rapid development of the industries producing investment goods in the beginning by increasing appreciably the proportion of investment in the basic heavy industries. As the capacity to manufacture both heavy and light machinery and other capital goods increases, the capacity to invest (by using home-produced capital goods) would also increase steadily and India would become more and more independent of the import of foreign machinery and capital goods." (Mahalanobis, 1963: 26).

[11] Planning Commission (1956: 25).

[12] "In the long run, the rate of industrialisation and the growth of national economy would depend on the increasing production of coal, electricity, iron and steel, heavy machinery, heavy chemicals, and the heavy industries generally which would increase

The gist of our above discussion is reflected in the following words of Gunnar Myrdal (1968: 1162) which merit quotation at some length:

"In India the existence of coal and iron deposits and the fact that even the import of development goods may have to be restricted are pragmatic reasons for assigning major emphasis to heavy industry in the planning of industrial production and, of course, are recognized as such. Nevertheless, the concentration on heavy industry can only be fully understood against the background of ideological inspiration. In part, the prevailing ideology had been influenced by Communist theory and practice, as adapted to India's colonial heritage. Thus the case for the priority of "basic industry" is often stated in terms of developing a "self-reliant economy." Reduced to its essentials, the argument in this guise holds that independence can only be consolidated when most of the capital goods required in domestic investment programmes are produced at home. Otherwise, the fate of domestic investment plans may tend to slip beyond the control of the planners and be tied instead to an export surplus or an inflow of foreign capital, both highly uncertain quantities. This amounts to saying that national sovereignity demands concentration on heavy industry—like the earlier policy choice of the Soviet government."

But it is also argued in India that capital goods industries are "basic" because they come earlier in the production process. Thus, Nehru maintained:

"Unless we start from the base, we cannot build the third or fourth storey. We can advance in minor sectors of the economy, but if we do not build the basic structure, it will not make any difference to the hundreds of millions of our people. The strategy Governing planning in India is to industrialise, and that means the basic industries being given the first place."

5. Couclusion:

From the above discussion, the following points become clear:

the capacity for capital formation. One important aim is to make India independent, as quickly as possible, of foreign imports of producer goods so that the accumulation of capital would not be hampered by difficulties in securing supplies of essential producer goods from other countries. The heavy industries must, therefore, be expanded with all possible speed". (Mahalanobis, 1963 : 92).

1. India was justified to emphasize capital goods industry because of the following reasons which existed on the eve of planning:

(a) India was favourably endowed with the natural resources required for industrialization, in particular, the local availability of coal and iron ore which provide a base on which heavy industries can be built:

(b) India had an internal market large enough to make possible the exploitation of the economies of scale normally associated with heavy industry; and

(c) India's perceived lessons of her history and the independence struggle also moved her in the same direction.

2. India developed her development strategy as applicable to Indian conditions, and certainly not as a result of any outside influences or pressures. As Bhagwati and Chakravarty (1969: 67) point out, "the structural planning models . . . underline the somewhat uncommon character of India's economy and political structure". In fact, as Little (1982: 51) notes, "the style of Indian Planning and development owed nothing to the Western and Latin American debates". On the contrary, as Singer (1982) recollected, "P.C. Mahalanobis became the prophet or guru of the development economists in this respect and Calcutta became their Mecca."

In sum, the thesis put forward by Lal (1983) proves to be baseless, at least, as far as his attribution to outside influence in shaping India's development substantive strategy is concerned. Our analysis supports the point of view of John Toye (1987).

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ASIAN DATA BANK

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INDIA :
AN INTERNATIONAL COMPARISON

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TABLE 1
BALANCE OF PAYMENTS AND RESERVES

Sl. No.	Countries	Current account balance (millions of dollars)		Receipts of workers remittances (millions of dollars)		Net direct private investment (millions of dollars)		Gross international reserves		
								Millions of dollars		In months of import coverage
		1970	1985	1970	1985	1970	1985	1970	1985	1985
1.	INDIA	−394	−2,481•	113	2,291•	6	—	1023	9,494•	5.4
A.	*Developed Countries*									
2.	Australia	−837	−8,684	—	—	790	−324	1,709	8,361	2.7
3.	Canada	821	−432	—	—	566	−6,008	4,732	9,079	1.0
4.	France	−203	749	130	230	248	325	5,199	53,354	4.2
5.	Germany, F.R.	852	13,500	—	—	−290	−2,946	13,879	75,504	4.6
6.	Italy	902	−4,132	446	1,170	498	−892	5,548	37,316	4.0
7.	Japan	1,980	49,170	—	—	−260	−5,810	4,876	34,642	2.5
8.	Norway	−242	−2,926	—	11	32	−1,049	813	13,583	6.3
9.	Sweden	−265	1,204	—	—	−104	−964	775	7,778	2.4
10.	Switzerland	72	6,207	—	66	—	−2,378	5,315	45,249	10.9
11.	United Kingdom	1,910	5,155	—	—	−185	−4,254	2,918	19,083	1.2
12.	U.S.A.	2,320	−117,750	—	—	−6,130	−900	15,237	117,982	3.1
B.	*Developing Countries—Asia*									
13.	Bangladesh	—	−543	—	421	—	−1	—	353	*1.4*
14.	China	—	−11,417	—	180	—	*1,031*	—	*16,881*	*4.9*

15.	*Hong Kong*	—	—	—	—	—	—	—	—	—
16.	Indonesia	−310	−1840	—	61	—	271	160	5,988	3.2
17.	Korea, Rep. of	−623	−887	—	—	66	200	610	2,971	1.0
18.	Malaysia	8	−723	—	—	94	685	667	5.677	3.7
19.	Pakistan	−667	−1092	86	2,526*	23	124*	195	1,429*	2.2
20.	Philippines	−48	8	—	111	−29	−14	255	1,099	1.6
21.	Singapore	−572	−253	—	—	93	1,076	1,012	12,847	5.2
22.	Thailand	−250	−1,554*	—	—	43	160	911	3,004	3.0
C.	*Developing Countries—Latin America*									
23.	Argentina	−163	−954*	—	—	11	977	682	4,553	4.8
24.	Brazil	−837	−273	—	2	407	1,267	1,190	11,618	4.7
25.	Chile	−91	−1,307	—	—	−79	112	392	2,950	5.8
26.	Colombia	−293	−1,390	6	117	39	729	207	2,197	3.9
27.	Venezuela	−104	3,086	—	—	−23	106	1,047	13,998	12.3
D.	*Developing Countries—Africa*									
28.	Egypt, Arab Rep.	−148	−1,895	29	3,212	—	1,175	165	1,587	1.5
29.	Ethiopia	−32	−130*	—	—	4	—	72	217	1.2*
30.	Kenya	−49	−208	—	—	14	77	220	417	2.7
31.	Nigeria	−368	1,242	—	—	205	160	911	3,004	3.0
32.	South Africa	−1,215	2,615	—	—	318	21	1,057	1,897	1.4
33.	Tanzania	−36	—	—	—	—	—	65	16	—

*Figures are for years other than those specified.

Source: World Bank, *World Development Report*, 1987.

TABLE 2
TOTAL EXTERNAL DEBT

Sl. No.	Countries	Long-term debt (millions of dollars)				Use of IMF credit (millions of dollars)		Short-term debt (millions of dollars)		Total external debt (millions of dollars)	
		Public and publicly guaranteed		Private non-guaranteed							
		1970	1985	1970	1985	1970	1985	1970	1985	1970	1985
1.	INDIA	8,109	26,650	100	3,093	10	4,202	—	1,516	—	35,460
A.	*Developing Countries—Asia*										
2.	Bangladesh	—	5,968	—	0	—	424	—	135	—	6,526
3.	China	—	7,020	—	—	0	0	—	—	—	—
4.	Hong Kong	3	251	—	—	0	0	—	749	—	—
5.	Indonesia	2,447	26,225	461	3,810	139	46	—	5,280	—	35,761
6.	Korea, Rep. of	1,844	29,126	175	6,630	0	1,508	—	10,732	—	47,596
7.	Malaysia	396	13,834	50	4,132	0	118	—	—	—	—
8.	Pakistan	3,081	10,681	5	26	45	1,266	—	722	—	12,695
9.	Philippines	575	13,561	919	2,998	69	1,052	—	8,573	—	26,184
10.	Singapore	154	1,791	—	—	0	0	—	262	—	—
11.	Thailand	326	9,898	402	3,307	0	1,020	—	3,200	—	17,489
B.	*Developing Countries—Latin America*										
12.	Argentina	1,891	35,604	3,291	4,575	0	2,312	—	5,953	—	48,444
13.	Brazil	3,432	73,894	1,706	17,200	0	4,619	—	*11,017*	—	*106,730*

14. Chile	2,075	12,735	501	4,731	2	1,088	—	1,668	—	20,221
15. Colombia	1,299	9,377	283	1,568	55	0	—	3,099	—	14,044
16. Venezuela	729	16,650	236	5,150	0	0	—	10,279	—	32,079
C. *Developing Countries—Africa*										
17. Egypt, Arab Rep.	1,760	17,751	—	750	49	41	—	5,800	—	24,342
18. Ethiopia	169	1,742	0	0	0	50	—	77	—	1,869
19. Kenya	333	2,857	88	406	0	486	—	470	—	4,219
20. Nigeria	458	13,016	115	416	0	0	—	4,916	—	18,348
21. South Africa	24	296	0	0	0	28	—	17	—	35,460
22. Tanzania	257	2,982	15	6	0	21	—	600	—	3,609

Source: World Bank, *World Development Report*, 1987.

TABLE 3
FLOW OF PUBLIC AND PRIVATE EXTERNAL CAPITAL

Sl. No.	Countries	Disbursements (millions of dollars)				Repayment of principal (millions of dollars)				Net-flow (millions of dollars)			
		Public and publicly guaranteed		Private non-guaranteed		Public and publicly guaranteed		Private non-guaranteed		Public and publicly guaranteed		Private non-guaranteed	
		1970	1985	1970	1985	1970	1985	1970	1985	1970	1985	1970	1985
1.	INDIA	922	3,449	25	1,135	340	1,084	25	653	583	2,364	0	482
A.	*Developing Countries—Asia*												
2.	Bangladesh	—	581	—	0	—	126	—	0	—	455	—	0
3.	China	—	—	—	—	—	—	—	—	—	—	—	—
4.	Hong Kong	0	9	—	—	1	47	—	—	−1	−38	—	—
5.	Indonesia	442	3,502	195	770	59	2,360	61	760	383	1,142	134	10
6.	Korea, Rep. of	444	5,615	32	2,501	199	2,879	7	1,242	245	2,736	25	1,259
7.	Malaysia	45	3,393	12	735	47	2,839	9	603	−2	553	3	133
8.	Pakistan	485	986	3	13	112	766	1	14	374	220	2	−1
9.	Philippines	128	1,277	276	285	73	426	186	151	56	851	90	134
10.	Singapore	60	331	—	—	6	567	—	—	54	−236	—	—
11.	Thailand	51	2,499	169	784	23	896	107	786	28	1,553	62	−2
B.	*Developing Countries—Latin America*												
12.	Argentina	486	3,790	—	—	343	838	—	—	143	2,952	—	—
13.	Brazil	892	2,503	900	0	*256*	*1,497*	*200*	*757*	*635*	*1,006*	*700*	*−757*

14. *Chile*	405	1,178	247	86	165	223	41	201	240	955	206	−115
15. *Colombia*	254	1,784	0	235	78	647	59	104	176	1,137	−59	131
16. Venezuela	225	100	—	—	42	788	—	—	183	−688	—	—
C. *Developing Countries—Africa*												
17. Egypt, Arab Rep.	398	2,417	—	340	300	1,682	—	140	99	735	—	200
18. Ethiopia	28	368	0	0	15	69	0	0	13	299	0	0
19. Kenya	34	271	—	—	17	244	—	—	17	27	—	—
20. Nigeria	56	1,560	25	90	37	2,748	30	125	18	−1,188	−5	−35
21. South Africa	—	—	—	—	—	—	—	—	—	—	—	—
22. Tanzania	50	161	—	—	10	40	—	—	40	121	—	—

Source: World Bank, *World Development Report*, 1987

TABLE 4
TOTAL EXTERNAL PUBLIC AND PRIVATE DEBT AND DEBT SERVICE RATIOS

Sl. No.	Countries	Total long-term debt disbursed and outstanding				Total interest payments on long-term debt (millions of dollars)		Total long-term debt service as percentage of			
		Millions of dollars		As percentage of GNP				GNP		Exports of goods and services	
		1970	1985	1970	1985	1970	1985	1970	1985	1970	1985
1.	INDIA	8,209	29,743	15.4	15.0	202	1,066	1.1	1.4	25.1	12.7*
A.	*Developing Countries—Asia*										
2.	Bangladesh	—	5,968	—	37.2	—	89	—	1.3	—	16.7
3.	China	—	—	—	—	—	—	—	—	—	—
4.	Hong Kong	—	—	—	—	—	—	—	—	—	—
5.	Indonesia	2,908	30,435	30.0	36.6	45	1,931	1.7	6.1	—	25.1
6.	Korea, Rep. of	2,019	35,756	23.3	43.0	76	2,991	3.2	8.6	20.4	21.5
7.	Malaysia	446	17,966	10.9	62.0	25	1,461	2.0	16.9	4.4	27.5
8.	Pakistan	3,086	10,707	30.8	31.7	77	308	1.9	3.2	23.5	30.0
9.	Philippines	1,495	16,559	21.1	52.1	42	970	4.3	4.9	22.8	19.5
10.	Singapore	—	—	—	—	—	—	—	—	—	—
11.	Thailand	727	13,268	11.1	36.0	33	911	2.5	7.0	14.0	25.4
B.	*Developing Countries—Latin America*										
12.	Argentina	5,182	40,179	23.3	56.4	—	—	—	—	—	—
13.	Brazil	5,138	91,094	12.2	43.8	224	*7,950*	*1.6*	*4.9*	*21.8*	*34.8*

14. *Chile*	2,576	17,465	32.2	123.9	104	1,646	3.9	14.7	24.4	44.1
15. *Colombia*	1,582	10,945	22.5	33.3	59	861	2.8	4.9	19.3	33.4
16. *Venezuela*	965	21,800	8.7	46.1	—	—	—	—	—	—
C. *Developing Countries—Africa*										
17. Egypt, Arab Rep.	—	18,501	—	64.5	—	627	—	8.5	—	33.6
18. Ethiopia	169	1,742	9.5	37.1	6	35	1.2	2.2	11.4	10.9*
19. Kenya	421	3,263	27.2	58.5	—	—	—	—	—	—
20. Nigeria	573	13,432	5.7	17.8	28	1,298	0.9	5.5	7.1	32.1
21. South Africa	—	—	—	—	—	—	—	—	—	—
22. Tanzania	272	2,988	21.3	48.6	—	—	—	—	—	—

*Figures are for years other than those specified.
Source: World Bank, *World Development Report*, 1987.

TABLE 5
EXTERNAL PUBLIC DEBT AND DEBT SERVICE RATIOS

Sl. No.	Countries	External public debt outstanding and disbursed				Interest payments on external public debts (millions of dollars)		Debt service as percentage of			
		Millions of dollars		As percentage of GNP				GNP		Exports of goods and services	
		1970	1985	1970	1985	1970	1985	1970	1985	1970	1985
1.	INDIA	8,109	26,650	15.2	13.5	196	801	1.0	1.0	23.7	9.3*
A.	*Developing Countries—Asia*										
2.	Bangladesh	—	5,968	—	37.2	—	89	—	1.3	—	16.7
3.	China	—	7,020	—	2.6	—	—	—	—	—	—
4.	Hong Kong	3	251	0.1	0.7	0	24	—	0.2	—	0.2
5.	Indonesia	2,447	26,625	25.2	32.0	24	1,655	0.9	4.8	—	19.9
6.	Korea, Rep. of	1,844	29,126	21.2	35.0	71	2,151	3.1	6.1	19.5	15.2
7.	Malaysia	396	13,834	9.7	47.8	22	1,130	1.7	13.7	3.7	22.3
8.	Pakistan	3,081	10,681	30.7	31.7	77	305	1.9	3.2	23.4	29.5
9.	Philippines	575	13,561	8.1	42.7	24	831	1.4	4.0	7.3	15.9
10.	Singapore	154	1,791	8.0	10.1	7	155	0.6	4.1	0.6	2.4
11.	Thailand	326	9,898	5.0	26.8	16	603	0.6	4.1	3.4	14.7
B.	*Developing Countries—Latin America*										
12.	Argentina	1,891	35,604	8.5	50.0	*121*	*3,476*	*2.1*	*6.1*	*21.6*	*41.8*

13. *Brazil*	3,432	73,894	8.2	35.5	135	6,280	0.9	3.7	12.5	26.5
14. *Chile*	2,075	12,735	25.9	90.3	78	1,006	3.0	8.7	19.1	26.2
15. Colombia	1,299	9,377	18.5	28.5	44	760	1.7	4.3	12.0	29.2
16. Venezuela	729	16,650	6.6	35.2	40	1,372	0.7	4.6	2.9	12.8
C. *Developing Countries—Africa*										
17. Egypt, Arab Rep.	1,760	17,751	23.1	61.9	54	567	4.6	7.8	36.8	30.9
18. Ethiopia	169	1,742	9.5	37.1	6	35	1.2	2.2	11.4	10.9*
19. Kenya	333	2,857	21.6	51.2	13	142	1.9	6.9	5.8	25.5
20. Nigeria	458	13,016	4.6	17.2	20	1,256	0.6	5.3	4.2	30.8
21. South Africa	1,760	17,751	23.1	61.9	54	567	4.6	7.8	36.8	30.9
22. Tanzania	257	2,982	20.1	48.5	7	21	1.3	1.0	5.2	16.7

*Figures are for years other than those specified.

Source: World Bank, *World Development Report*, 1987.

TABLE 6
TERMS OF EXTERNAL PUBLIC BORROWING

Sl. No.	Countries	Commitments (millions of dollars)		Average interest rate (per cent)		Average maturity (years)		Average grace period (years)		Public loans with variable interestrate as percentage of public debt	
		1970	1985	1970	1985	1970	1985	1970	1985	1970	1985
1.	INDIA	950	4,668	2.5	6.4	35	26	8	6	0.0	8.4
A.	*Developing Countries—Asia*										
2.	Bangladesh	—	772	—	1.0	—	41	—	10	—	0.1
3.	China	—	—	—	—	—	—	—	—	—	—
4.	Hong Kong	0	0	0.0	0.0	0	0	0	0	0.0	33.2
5.	Indonesia	520	4,016	2.6	8.1	34	16	9	6	0.0	21.7
6.	Korea, Rep. of	687	5,898	5.8	8.6	19	12	6	5	1.1	49.7
7.	Malaysia	84	2,743	6.1	8.5	19	22	5	17	0.0	54.3
8.	Pakistan	943	1,776	2.8	5.6	32	27	12	6	0.0	4.9
9.	Philippines	158	1,418	7.4	9.1	11	11	2	4	0.9	35.2
10.	Singapore	69	402	6.9	10.1	18	10	4	5	0.0	21.9
11.	Thailand	106	2,398	6.8	8.4	19	18	4	10	0.0	32.6
B.	*Developing Countries—Latin America*										
12.	Argentina	494	3,934	7.3	9.9	12	10	3	4	*0.0*	*60.2*
13.	Brazil	1,427	3,014	6.8	9.6	*14*	*12*	*3*	*3*	*11.7*	*71.5*

14. *Chile*	356	1,884	6.8	9.4	12	13	4	2	0.0	81.5
15. *Colombia*	363	2,600	6.0	9.7	21	12	5	3	0.0	40.7
16. Venezuela	198	34	7.8	9.5	8	20	2	5	2.6	93.4
C. *Developing Countries—Africa*										
17. Egypt, Arab Rep.	471	2,009	7.6	8.6	18	25	11	12	0.0	2.3
18. Ethiopia	21	487	4.4	3.4	32	19	7	4	0.1	5.4
19. Kenya	50	245	2.6	6.9	37	21	8	6	0.1	4.3
20. Nigeria	65	1,253	6.0	9.3	14	13	4	4	2.8	41.7
21. South Africa	—	—	—	—	—	—	—	—	—	—
22. Tanzania	284	73	1.2	0.5	39	47	11	11	1.6	0.1

Source: World Bank, *World Development Report*, 1987.

TABLE 7
OFFICIAL DEVELOPMENT ASSISTANCE : RECEIPTS

Sl. No.	Countries	Net disbursements of ODA from all sources								
		Millions of dollars							Per capita (dollars)	As percentage of GNP
		1979	1980	1981	1982	1983	1984	1985	1985	1985
1.	INDIA	1,350	2,147	1,910	1,545	1,743	1,542	1,470	1.9	0.7
A.	*Developing Countries—Asia*									
2.	Bangladesh	1,166	1,283	1,104	1,346	1,067	1,201	1,142	11.4	7.1
3.	China	17	66	477	524	670	798	940	0.9	0.4
4.	Hong Kong}	12	11	10	8	9	14	21	3.8	0.1
5.	Indonesia	721	950	975	906	745	673	600	3.7	0.7
6.	Korea, Rep. of	134	139	331	34	8	−37	−9	−0.2	—
7.	Malaysia	125	135	143	135	177	327	229	14.7	0.8
8.	Pakistan	684	1,130	764	849	669	683	750	7.8	2.2
9.	Philippines	267	300	376	333	429	397	486	8.9	1.5
10.	Singapore	6	14	22	21	15	41	24	9.3	0.1
11.	Thailand	393	418	407	389	432	475	481	9.4	1.3
B.	*Developing Countries—Latin America*									
12.	Argentina	43	19	44	30	47	49	39	1.3	0.1
13.	Brazil	107	85	235	208	101	161	123	0.9	0.1

14. Chile	−27	−10	−7	−8	—	3	40	3.3	0.3
15. Colombia	54	90	102	97	86	88	62	2.2	0.2
16. Venezuela	7	15	14	12	10	14	11	0.6	—
C. *Developing Countries—Africa*									
17. Egypt, Arab Rep.	1,450	1,387	1,292	1,417	1,438	1,768	1,759	36.3	6.1
18. Ethiopia	191	212	245	200	339	364	710	16.8	15.1
19. Kenya	351	397	449	485	401	411	439	21.5	7.9
20. Nigeria	27	36	41	37	48	33	32	0.3	—
21. South Africa	—	—	—	—	—	—	—	—	—
22. Tanzania	589	679	703	684	594	558	487	21.9	7.9

Source: World Bank, *World Development Report*, 1987.

TABLE 8
CENTRAL GOVERNMENT EXPENDITURE

Sl. No.	Countries	Percentage of total expenditure												Total expenditure (Percentage of GNP)		Overall surplus/ deficit (Percentage of GNP)	
		Defence		Education		Health		Housing amentities, social security and welfare		Economic services		Others					
		1972	1985	1972	1985	1972	1985	1972	1985	1972	1985	1972	1985	1972	1985	1972	1985
1.	INDIA	—	18.8*	—	1.9*	—	2.4*	—	4.4*	—	27.0*	—	45.5*	—	16.7*	—	−8.4*
A.	*Developed Countries*																
2.	Australia	14.1	9.3	4.2	7.5	7.0	9.5	20.8	29.4	14.3	8.3	39.6	36.0	22.5	31.6	−0.5	−3.2
3.	Canada	—	7.9*	—	3.5*	—	6.4*	—	35.8*	—	17.2*	—	29.2*	—	26.6*	—	−6.9*
4.	France	—	—	—	—	—	—	—	—	—	—	—	—	32.5	45.2	0.7	−3.1
5.	Germany, F.R.	12.4	9.2*	1.5	0.7*	17.5	18.7*	46.9	50.5*	11.3	7.1*	10.4	13.8*	24.2	30.7*	0.7	−1.7*
6.	Italy	6.3*	3.5	16.1*	7.7	13.5*	12.1	44.8*	32.5	18.4*	7.5	0.9*	36.8	31.8*	55.3	−9.4*	−15.9
7.	Japan	—	—	—	—	—	—	—	—	—	—	—	—	12.7	17.8	−1.9	−6.0
8.	Norway	9.7	8.2*	9.9	8.9*	12.3	10.8*	39.9	36.3*	20.2	20.1*	8.0	15.7*	35.0	38.2*	−1.5	—
9.	Sweden	12.5	6.4	14.8	8.6	3.6	1.2	44.3	50.1	10.6	6.8	14.3	26.9	28.0	46.5	−1.2	−7.0
10.	Switzerland	15.1	10.3*	4.2	3.1*	10.0	13.1*	39.5	50.6*	18.4	12.2*	12.8	10.8*	13.3	19.9*	0.9	−0.1*
11.	United Kingdom	16.7	—	2.6	—	12.2	—	26.5	—	11.1	—	30.8	—	32.7	41.1	−2.7	−3.1
12.	U.S.A.	32.2	24.9	3.2	1.8	8.6	11.3	35.3	31.6	10.6	8.3	10.1	22.1	19.4	24.5	−1.6	−5.3
B.	*Developing Countries—Asia*																
13.	Bangladesh	5.1*	—	14.8*	—	5.0*	—	9.8*	—	39.3*	—	25.9*	—	9.4*	—	−1.9*	—
14.	China	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15.	Hong Kong	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16.	Indonesia	*18.6**	*12.9**	*7.4**	*11.3**	*1.4**	*2.5**	*0.9**	*1.4**	*30.5**	*37.9**	*41.2**	*33.9**	*15.1**	*20.2**	*−2.5**	*1.5**

17. Korea, Rep. of	25.8	29.7	15.9	18.4	1.2	1.4	5.8	6.7	25.6	17.5	25.7	26.3	18.3	18.4	−3.9	−1.3
18. Malaysia	18.5	—	23.4	—	6.8	—	4.4	—	14.2	—	32.7	—	26.5	—	−9.4	—
19. Pakistan	39.9*	32.3*	1.2*	2.9*	1.1*	1.1*	3.2*	10.2*	21.4*	27.8*	33.2*	25.7*	16.5*	19.0*	−6.8*	−7.2*
20. Philippines	10.9	11.9	16.3	20.1	3.2	6.0	4.3	4.0	17.6	44.9	47.7	13.2	13.4	10.8	−2.0	−1.9
21. Singapore	35.3	20.1*	15.7	20.2*	7.8	6.2*	3.9	6.5*	9.9	15.0*	27.3*	32.0*	16.8*	26.3*	1.3*	4.1*
22. Thailand	20.2	20.2	19.9	19.5	3.7	5.7	7.0	4.6	25.6	22.6	23.5	27.4	17.2	21.8	−4.3	−5.6
C. *Developing Countries—Latin America*																
23. Argentina	10.1*	8.8*	20.0*	9.5*	—	1.8*	20.0*	38.3*	30.0*	20.3*	20.0*	21.3*	19.6*	18.0*	−4.9*	−5.4*
24. Brazil	8.3	4.0*	8.3	3.2*	6.7	7.6*	35.0	32.7*	23.3	14.5*	18.3	38.0*	17.6*	21.1*	−0.3	−4.4*
25. Chile	10.0	11.5	20.0	13.2	10.0	6.1	40.0	43.8	22.5	7.1	20.0	18.4	43.2	35.5	−13.0	−2.7
26. Colombia	—	—	—	—	—	—	—	—	—	—	—	—	13.0	—	−2.5	—
27. Venezuela	10.3	6.1*	18.6	17.7*	11.7	7.6*	9.2	14.7*	25.4	22.8*	24.8	31.1*	21.3	25.6*	−0.3	3.3*
D. *Developing Countries—Africa*																
28. Egypt, Arab Rep.	—	17.5	—	10.6	—	2.4	—	14.4	—	7.9	—	47.1	—	48.1	—	−10.4
29. Ethiopia	14.3	—	14.4	—	5.7	—	4.4	—	22.9	—	38.3	—	13.7	—	−1.4	—
30. Kenya	6.0	12.9*	21.9	19.8*	7.9	6.7*	3.9	0.6*	30.1	24.8*	30.2	35.3*	21.0	26.6*	−3.9	−5.2*
31. Nigeria	40.2	—	4.5	—	3.6	—	0.8	—	19.6	—	31.4	—	10.2	—	−0.9	—
32. South Africa	—	—	—	—	—	—	—	—	—	—	—	—	21.8	—	−4.2	—
33. Tanzania	11.9	13.8	17.3	7.2	7.2	4.9	2.1	1.4	39.0	24.0	22.6	48.6	19.7	24.7	−5.0	—

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*Figures are for years other than those specified.

Source: World Bank, *World Development Report*, 1987

TABLE 9
CENTRAL GOVERNMENT CURRENT REVENUE

Sl. No.	Countries	Percentage of total current revenue												Total current revenue (percentage of GNP)	
		Tax revenue										Non-tax revenue			
		Taxes on income, profit and capital gain		Social security contributions		Domestic taxes on goods and services		Taxes on international trade and transactions		Other taxes					
		1972	1985	1972	1985	1972	1985	1972	1985	1972	1985	1972	1985	1972	1985
1.	INDIA	—	16.2*	—	—	—	38.9*	—	24.4*	—	0.5*	—	19.9*	—	14.0*
A.	*Developed Countries*														
2.	Australia	58.3	60.4	—	—	21.9	24.0	5.2	5.2	2.1	0.5	12.5	9.9	24.4	28.8
3.	Canada	—	48.5*	—	13.4*	—	19.5*	—	5.3*	—	0.1*	—	13.3*	—	20.4*
4.	France	16.9	16.8	37.1	44.5	37.9	30.0	0.3	—	2.9	3.7	4.9	4.9	33.5	42.2
5.	Germany, F.R.	19.7	17.0*	46.6	55.5*	28.1	21.6*	0.8	—	0.8	0.1*	4.0	5.7*	25.2	29.2*
6.	Italy	16.6*	36.5	39.2*	33.1	31.7*	23.9	0.4*	0.2	4.3*	2.0	7.7*	4.2	26.9*	40.7
7.	Japan	64.8	68.8*	—	—	22.6	16.7*	3.5	2.0*	6.8	7.5	2.4	5.0*	11.2	11.9*
8.	Norway	22.5	25.6*	20.5	21.0*	47.6	37.8*	1.6	0.5*	1.0	0.8*	6.6	14.2*	37.0	44.0*
9.	Sweden	27.0	19.4	21.6	30.2	34.0	29.2	1.5	0.5	4.7	5.0	11.3	15.6	32.5	41.7
10.	Switzerland	13.9	15.4*	37.3	49.2*	21.5	19.0*	16.7	7.7*	2.6	3.3*	8.0	5.5*	14.5	19.6*
11.	United Kingdom	39.4	38.5*	15.1	18.3*	27.1	29.5*	1.7	—	5.5	2.5*	11.2	11.2*	33.5	37.9*
12.	U.S.A.	59.4	50.0	23.6	32.9	7.1	4.5	1.6	1.6	2.5	0.8	5.7	10.2	18.0	19.8
B.	*Developing Countries*														
13.	Bangladesh	3.7*	—	—	—	22.4*	—	18.0*	—	3.8*	—	52.2*	—	8.6*	—
14.	China	—	—	—	—	—	—	—	—	—	—	—	—	—	—

15. Hong Kong	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16. Indonesia	45.5	67.0*	—	—	22.8	9.4*	17.6	3.3*	3.5	1.6*	10.6	18.7*	13.4	22.5*
17. Korea, Rep. of	29.2	25.3	0.8	1.5	41.7	43.2	10.7	14.2	5.2	3.9	12.3	11.9	13.4	19.0
18. Malaysia	25.2	—	0.1	—	24.2	—	27.9	—	1.4	—	21.2	—	20.3	—
19. Pakistan	13.6*	12.2*	—	—	35.9*	35.0*	34.2*	30.9*	0.5*	0.3*	15.8*	21.6*	12.3*	15.7*
20. Philippines	13.8	26.6	—	—	24.3	36.4	23.0	23.7	29.7	2.5	9.3	10.8	12.4	11.5
21. Singapore	24.4	30.1*	—	—	17.6	14.0*	11.1	4.6*	15.5	15.7*	31.4	35.6*	21.6	28.7*
22. Thailand	12.1	20.7	—	—	46.3	43.9	28.7	22.2	1.8	2.0	11.2	11.1	12.9	16.3
C. *Developing Countries—Latin America*														
23. Argentina	12.5*	3.1*	25.0*	24.1*	25.0*	42.6*	12.5*	13.3*	—	6.9*	25.0*	9.9*	14.7*	15.9*
24. Brazil	20.0	17.9*	27.7	23.3*	35.4	18.0	7.7	4.3*	3.1	3.9*	6.2	32.6	19.1	24.7*
25. Chile	14.3	11.4	28.6	7.3	28.6	39.9	14.3	10.9	—	7.0	14.3	23.5	30.2	32.8
26. Colombia	37.2	—	13.9	—	16.0	—	20.3	—	7.2	—	5.5	—	10.6	—
27. Venezuela	54.2	59.2*	6.0	3.2*	6.7	4.3*	6.1	18.0*	1.1	1.6*	25.9	13.7*	21.8	31.0*
D. *Developing Countries—Africa*														
28. Egypt, Arab Rep.	—	15.2	—	13.6	—	12.1	—	15.7	—	6.5	—	37.0	—	39.4
29. Ethiopia	23.0	—	—	—	29.8	—	30.4	—	5.6	—	11.1	—	10.5	—
30. Kenya	35.6	28.3*	—	—	19.9	40.8*	24.3	20.4*	1.4	0.5*	18.8	10.0*	18.0	21.7*
31. Nigeria	43.0	—	—	—	26.3	—	17.5	—	0.2	—	13.0	—	11.6	—
32. South Africa	54.8	—	1.2	—	21.5	—	4.6	—	5.0	—	12.8	—	21.2	—
33. Tanzania	29.9	—	—	—	29.1	—	21.7	—	0.5	—	18.8	—	15.8	—

*Figures are for years other than those specified.

Source: World Bank, *World Development Report*, 1987

TABLE 10
INCOME DISTRIBUTION

Sl. No.	Countries	Year	Percentage share of household income by percentile groups of households					
			Lowest 20 per cent	Second quintile	Third quintile	Fourth quintile	Highest 20 per cent	Highest 10 per cent
1.	INDIA	1975–76	7.0	9.2	13.9	20.5	40.4	33.6
A.	*Developing Countries*							
2.	Australia	1975–76	5.4	10.0	15.0	22.5	47.1	30.5
3.	Canada	1981	5.3	11.8	18.0	24.9	40.0	23.8
4.	France	1975	5.5	11.5	17.1	23.7	42.2	26.4
5.	Germany, F.R.	1978	7.9	12.5	17.0	23.1	39.5	24.0
6.	Italy	1977	6.2	11.3	15.9	22.7	43.9	28.1
7.	Japan	1979	8.7	13.2	17.5	23.1	37.5	22.4
8.	Norway	1982	6.0	12.9	18.3	24.6	38.2	22.8
9.	Sweden	1981	7.4	13.1	16.8	21.0	41.7	28.1
10.	Switzerland	1978	6.6	13.5	18.5	23.4	38.0	23.7
11.	United Kingdom	1979	7.0	11.5	17.0	24.8	39.7	23.4
12.	U.S.A.	1980	5.3	11.9	17.9	25.0	39.9	23.3
B.	*Developing Countries—Asia*							
13.	Bangladesh	1981–82	6.6	10.7	15.3	22.1	45.3	29.5
14.	China	—	—	—	—	—	—	—
15.	Hong Kong	1980	5.4	10.8	15.2	21.6	47.0	31.3
16.	Indonesia	1976	6.6	7.8	12.6	23.6	49.4	34.0
17.	Korea, Rep. of	1976	5.7	11.2	15.4	22.4	45.3	27.5

18. *Malaysia*	1973	3.5	7.7	12.4	20.3	56.1	39.8
19. Pakistan	—	—	—	—	—	—	—
20. Philippines	1985	5.2	8.9	13.2	20.2	52.5	37.0
21. Singapore	—	—	—	—	—	—	—
22. Thailand	1975–76	5.6	9.6	13.9	21.1	49.8	34.1
C. *Developing Countries—Latin America*							
23. Argentina	1970	4.4	9.7	14.1	21.5	50.3	35.2
24. Brazil	1972	2.0	5.0	9.4	17.0	66.6	50.6
25. Chile	—	—	—	—	—	—	—
26. Colombia	—	—	—	—	—	—	—
27. Venezuela	1970	3.0	7.3	12.9	22.8	54.0	35.7
D. *Developing Countries—Africa*							
28. Egypt, Arab Rep.	1974	5.8	10.7	14.7	20.8	48.0	33.2
29. Ethiopia	—	—	—	—	—	—	—
30. Kenya	1976	2.6	6.3	11.5	19.2	60.4	45.8
31. Nigeria	—	—	—	—	—	—	—
32. South Africa	—	—	—	—	—	—	—
33. Tanzania	—	—	—	—	—	—	—

Source: World Bank, *World Development Report*, 1987

TABLE 11
POPULATION GROWTH AND PROJECTIONS

Sl. No.	Countries	Average annual growth of population (per cent)			Population (millions)			Hypothetical size of stationary population (millions)	Assumed year of reaching net reproduction rate of 1	Population momentum 1985
		1965–80	1980–85	1985–2000	1985	1990	2000			
1.	INDIA	2.3	2.2	1.8	765	843	996	1,678	2010	1.7
A.	*Developed Countries*									
2.	Australia	1.8	1.4	0.9	16	17	18	20	2020	1.4
3.	Canada	1.3	1.1	0.7	25	27	28	29	2020	1.3
4.	France	0.7	0.6	0.4	55	56	59	60	2020	1.2
5.	Germany, F.R.	0.3	−0.2	−0.2	61	60	59	44	2020	1.0
6.	Italy	0.6	0.3	0.1	57	57	58	50	2020	1.1
7.	Japan	1.2	0.7	0.4	121	124	129	124	2020	1.1
8.	Norway	0.6	0.3	0.2	4	4	4	4	2020	1.2
9.	Sweden	0.5	0.1	0.0	8	8	8	7	2020	1.0
10.	Switzerland	0.5	0.2	0.1	6	6	7	6	2020	1.1
11.	United Kingdom	0.2	0.1	0.1	57	57	57	55	2020	1.1
12.	U.S.A.	1.0	1.0	0.6	239	249	262	277	2020	1.3
B.	*Developing Countries—Asia*									
13.	Bangladesh	2.7	2.6	2.3	101	114	141	305	2030	1.9
14.	China	2.2	1.2	1.3	1,040	1,116	1,274	1,683	2000	1.6
15.	Hong Kong	2.2	1.4	1.0	5	5	6	7	2010	1.4
16.	Indonesia	2.3	2.1	1.8	162	179	212	263	2020	1.8
17.	Korea, Rep. of	1.9	1.5	1.2	41	44	49	65	2000	1.6

18. *Malaysia*	2.5	2.5	1.9	16	17	21	33	2005	1.8
19. *Pakistan*	3.1	3.1	2.7	96	112	146	395	2035	1.8
20. Philippines	2.8	2.5	2.2	55	62	75	140	2015	1.8
21. Singapore	1.6	1.2	0.9	3	3	3	3	2010	1.4
22. Thailand	2.7	2.1	1.6	52	57	66	99	2000	1.7
C. *Developing Countries—Latin America*									
23. Argentina	1.6	1.6	1.2	31	33	37	53	2010	1.5
24. Brazil	2.5	2.3	1.8	136	150	178	292	2010	1.7
25. Chile	1.8	1.7	1.2	12	13	15	20	2000	1.6
26. Colombia	2.2	1.9	1.7	28	31	37	59	2010	1.7
27. Venezuela	3.5	2.9	2.6	17	20	24	39	2005	1.8
D. *Developing Countries—Africa*									
28. Egypt, Arab Rep.	2.4	2.8	2.2	49	55	67	132	2020	1.8
29. Ethiopia	2.7	2.5	2.9	42	49	65	204	2040	1.9
30. Kenya	3.9	4.1	4.0	20	25	36	121	2030	2.0
31. Nigeria	2.5	3.3	3.4	100	118	163	529	2035	1.9
32. South Africa	2.3	2.5	2.2	32	37	45	95	2025	1.8
33. Tanzania	3.3	3.5	3.5	22	27	37	123	2035	1.9

Source: World Bank, *World Development Report*, 1987.

TABLE 12

DEMOGRAPHY AND FERTILITY

S. No.	Countries	Crude birth rate per thousand population		Crude death rate per thousand population		Percentage change in Crude birth rate	Percentage change in Crude death rate	Total fertility rate		Percentage of married women of child-bearing age using contraception	
		1965	1985	1965	1985	1965–85	1965–85	1985	2000	1970	1984
1.	INDIA	45	33	20	12	−27.2	−41.0	4.5	3.0	12	35
A.	*Developed Countries*										
2.	Australia	20	15	9	7	−25.0	−22.2	2.0	2.1	67*	—
3.	Canada	23	15	8	7	−37.2	−12.5	1.7	1.8	—	73
4.	France	18	14	11	10	−22.2	−9.1	2.0	2.1	64*	79*
5.	Germany, F.R.	18	10	12	11	−45.2	−8.3	1.3	1.5	—	—
6.	Italy	19	10	10	9	−47.4	−10.0	1.5	1.7	—	78*
7.	Japan	19	13	7	6	−33.2	−14.3	1.8	1.9	56	57
8.	Norway	18	12	10	10	−31.5	—	1.7	1.8	—	71*
9.	Sweden	16	11	10	11	−28.9	10.0	1.7	1.8	—	78
10.	Switzerland	19	11	10	9	−40.3	−10.0	1.5	1.7	—	70*
11.	United Kingdom	18	13	12	12	−29.3	3.4	1.8	1.8	69*	77*
12.	U.S.A.	22	16	9	9	−27.3	−3.6	1.8	1.9	65*	68*
B.	*Developing Countries—Asia*										
13.	Bangladesh	47	40	21	15	−14.6	−29.0	5.7	3.7	—	*25*
14.	China	39	18	13	7	−53.8	−61.0	2.3	2.1	—	69*
15.	Hong Kong	27	14	6	5	−48.1	−16.7	*1.8*	2.0	*50*	*72*
16.	Indonesia	43	32	20	12	*−24.4*	*−39.5*	*4.1*	*2.8*	*0*	*40*

17. *Korea, Rep. of*	35	21	11	6	−40.0	−44.8	2.4	2.1	32	70
18. *Malaysia*	40	30	12	6	−26.2	−45.5	3.7	2.4	33*	51
19. Pakistan	48	44	21	15	−12.5	−30.1	6.1	4.6	6	8
20. Philippines	42	33	12	8	−21.3	−34.0	4.3	3.0	2	32*
21. Singapore	31	17	6	5	−44.0	−16.7	1.7	1.9	45	47*
22. Thailand	41	26	10	8	−37.4	−24.2	3.2	2.2	15	65
C. *Developing Countries—Latin America*										
23. Argentina	22	23	9	9	7.8	—	3.3	2.5	—	74*
24. Brazil	39	29	11	8	−24.3	−30.5	3.6	2.6	—	65
25. Chile	32	22	11	7	−33.1	−38.0	2.5	2.1	—	43*
26. Colombia	45	27	14	7	−38.7	−48.5	3.3	2.5	34	55
27. Venezuela	42	31	8	5	−26.0	−37.0	3.9	2.4	—	49*
D. *Developing Countries—Africa*										
28. Egypt, Arab Rep.	43	36	19	10	−17.7	−47.2	4.7	3.3	10	32
29. Ethiopia	43	46	20	19	5.1	−4.0	6.2	5.5	—	2
30. Kenya	51	54	21	31	4.7	−37.7	7.8	6.1	6*	17
31. Nigeria	51	50	23	16	−3.3	−28.4	6.9	5.7	—	5
32. South Africa	41	37	19	13	−9.9	−32.1	4.9	3.6	—	—
33. Tanzania	49	50	22	15	2.5	−30.3	7.0	5.8	—	1*

*Figures are for years other than those specified.
Source: World Bank, *World Development Report*, 1987.

TABLE 13

LIFE EXPECTANCY AND RELATED INDICATORS

S. No.	Countries	Life expectancy at birth (years)				Infant mortality rate (aged under 1)		Child death rate (aged 1–4)	
		Male		Female					
		1965	1985	1965	1985	1965	1985	1965	1985
1.	INDIA	46	57	44	56	151	89	23	11
A.	*Developed Countries*								
2.	Australia	68	75	74	80	19	9	1	—
3.	Canada	69	72	75	80	23	8	1	—
4.	France	68	75	75	81	22	8	1	—
5.	Germany, F.R.	67	72	73	78	24	10	1	—
6.	Italy	68	74	73	79	36	12	3	—
7.	Japan	68	75	73	80	18	6	1	—
8.	Norway	71	74	76	80	17	8	1	—
9.	Sweden	72	74	76	80	13	6	1	—
10.	Switzerland	69	73	75	80	18	8	1	—
11.	United Kingdom	68	72	74	77	20	9	1	—
12.	U.S.A.	68	72	74	80	22	11	1	—
B.	*Developing Countries—Asia*								
13.	Bangladesh	45	50	44	51	153	123	24	18
14.	China	54	68	55	70	90	35	11	2
15.	Hong Kong	64	73	71	79	28	9	2	—
16.	Indonesia	43	53	45	57	138	96	20	12

17. Korea, Rep. of	55	65	58	72	63	27	6	2
18. Malaysia	56	66	60	70	55	28	5	2
19. Pakistan	46	52	44	50	149	115	23	16
20. Philippines	54	61	57	65	72	48	11	4
21. Singapore	64	70	68	75	26	9	1	—
22. Thailand	54	62	58	66	88	43	11	3
C. *Developing Countries—Latin America*								
23. Argentina	63	67	69	74	58	34	4	1
24. Brazil	55	62	59	67	104	67	15	5
25. Chile	57	67	62	74	107	22	14	1
26. Colombia	54	63	59	67	96	48	8	3
27. Venezuela	61	66	65	73	65	37	6	2
D. *Developing Countries—Africa*								
28. Egypt, Arab Rep.	48	59	50	63	172	93	21	11
29. Ethiopia	42	43	43	47	165	168	37	38
30. Kenya	43	52	46	56	112	91	25	16
31. Nigeria	40	48	43	52	117	109	33	21
32. South Africa	45	53	48	57	124	78	22	7
33. Tanzania	41	50	45	54	138	110	29	22

Source: World Bank, *World Development Report*, 1987.

TABLE 14

EDUCATION

S. No.	Countries	Number enrolled in school as percentage of age group													
		Primary						Secondary						Higher education	
		Total		Male		Female		Total		Male		Female		Total	
		1965	1984	1965	1984	1965	1984	1965	1984	1965	1984	1965	1984	1965	1984
1.	INDIA	74	90*	89	105*	57	73*	27	34*	41	44*	13	23*	5	9*
A.	*Developed Countries*														
2.	Australia	99	107	99	107	99	106	62	94	63	92	61	95	16	27
3.	Canada	105	106*	106	107*	104	105*	56	102*	57	102*	55	102*	26	44*
4.	France	134	108*	135	109*	133	107*	56	90*	53	84*	59	96*	18	27*
5.	Germany, F.R.	—	99*	—	100*	—	99*	—	74*	—	72	—	76	9	29
6.	Italy	112	99	113	99	110	99	47	74	53	74*	41	73*	11	26
7.	Japan	100	100	100	100	100	101	82	95	82	94	81	94	13	30
8.	Norway	97	97	97	98*	98	98*	64	96*	66	—	62	—	11	29*
9.	Sweden	95	98	94	98*	96	98*	62	83	63	79	60	88	13	38
10.	Switzerland	87	—	87	—	87	—	37	—	38	—	35	—	8	21
11.	United Kingdom	92	101*	92	101*	92	101*	66	83	67	—	66	—	12	20
12.	U.S.A.	—	101	—	102	—	100	—	95	—	95	—	95	40	57
B.	*Developing Countries—Asia*														
13.	Bangladesh	49	62	67	67	31	*55*	*13*	*19*	*23*	*26*	*3*	*11*	*1*	*5*
14.	China	89	118	—	*129*	—	*107*	*24*	*37*	—	*43*	—	*31*	—	*1*

15. Hong Kong	103	105	106	106	99	104	29	69	32	66	25	72	5	13
16. Indonesia	72	118	79	121	65	116	12	39	18	45	7	34	1	7
17. Korea, Rep. of	101	99	103	99	99	99	35	91	44	94	25	88	6	26
18. Malaysia	90	97	96	98	84	97	28	53	34	53	22	53	2	6
19. Pakistan	40	42*	59	54*	20	29*	12	15*	18	—	5	—	2	2
20. Philippines	113	107	115	106	111	107	41	68	42	65	40	71	19	29
21. Singapore	105	115	110	118	100	113	45	71	49	70	41	73	10	12*
22. Thailand	78	97*	82	—	74	—	14	30*	16	—	11	—	2	23*
C. *Developing Countries—Latin America*														
23. Argentina	101	107	101	107	102	107	28	65	26	62	31	69	14	29
24. Brazil	108	103	109	108*	108	99*	16	35*	16	—	16	—	2	11*
25. Chile	124	107	125	108	122	106	34	66	31	63	36	69	6	15
26. Colombia	84	119	83	119	86	119	17	49	18	48	16	49	3	13
27. Venezuela	94	109	93	109	94	108	27	45	27	40	28	49	7	23
D. *Developing Countries—Africa*														
28. Egypt, Arab Rep.	75	84*	90	94*	60	72*	26	58*	37	70*	15	46*	7	21*
29. Ethiopia	11	32	16	—	6	—	2	12	3	14*	1	8*	—	—
30. Kenya	54	97	69	101	40	94	4	19	6	22	2	16	—	1*
31. Nigeria	32	92*	39	103*	24	81*	5	29*	7	—	3	—	—	3*
32. South Africa	90	—	91	—	88	—	15	—	16	—	14	—	4	—
33. Tanzania	32	87*	40	91*	25	84*	2	3*	3	4*	1	2*	—	—

*Figures are for years other than those specified.
Source: World Bank, *World Development Report, 1987*.

TABLE 15

URBANISATION

S. No.	Countries	Urban population				Percentage of urban population				Number of cities over 500,000 persons	
		As percentage of total population		Average annual growth rate (per cent)		In largest city		In cities of over 500,000 persons			
		1965	1985	1965–80	1980–85	1960	1985	1960	1980	1960	1980
1.	INDIA	19	25	3.6	3.9	7	6	26	39	11	36
A.	*Developed Countries*										
2.	Australia	83	86	0.2	1.4	26	24	62	68	4	5
3.	Canada	73	77	1.5	1.7	50	32	50	32	1	1
4.	France	67	73	2.7	1.0	25	23	34	34	4	6
5.	Germany, F.R.	79	86	0.8	0.1	20	18	48	45	11	11
6.	Italy	62	67	1.0	0.9	13	17	46	52	7	9
7.	Japan	67	76	2.1	1.8	18	22	35	42	5	9
8.	Norway	37	73	5.0	0.9	14	18	31	62	2	9
9.	Sweden	77	86	1.0	1.2	15	15	15	35	1	3
10.	Switzerland	53	60	1.2	0.9	19	22	19	22	1	1
11.	United Kingdom	87	92	0.5	0.3	24	20	61	55	15	17
12.	U.S.A.	72	74	1.2	2.3	13	12	61	77	40	65
B.	*Developing Countries—Asia*										
13.	Bangladesh	6	18	8.0	7.9	20	30	20	51	1	3
14.	China	18	22	2.6	3.3	6	6	42	45	38	78
15.	Hong Kong	89	93	2.3	1.3	*100*	*100*	*100*	*100*	*1*	*1*

16. Indonesia	*16*	*25*	4.7	2.3	20	23	34	50	3	9
17. Korea, Rep. of	32	64	5.7	2.5	35	41	61	77	3	7
18. Malaysia	26	38	4.5	4.0	19	27	0	27	0	1
19. Pakistan	24	29	4.3	4.8	20	21	33	51	2	7
20. Philippines	32	39	4.0	3.2	27	30	27	34	1	2
21. Singapore	100	100	1.6	1.2	100	100	100	100	1	1
22. Thailand	13	18	4.6	3.2	65	69*	65	69*	1	1
C. *Developing Countries—Latin America*										
23. Argentina	76	84	2.2	1.9	46	45	54	60	3	5
24. Brazil	50	73	4.5	4.0	14	15	35	52	6	14
25. Chile	72	83	2.6	2.1	38	44	38	44	1	1
26. Colombia	54	67	3.5	2.8	17	26	28	51	3	4
27. Venezuela	72	85	4.5	3.5	26	26	26	44	1	4
D. *Developing Countries—Africa*										
28. Egypt, Arab Rep.	41	46	2.9	3.4	38	39	53	53	2	2
29. Ethiopia	—	—	—	—	—	—	—	—	—	—
30. Kenya	—	—	—	—	—	—	—	—	—	—
31. Nigeria	—	—	—	—	—	—	—	—	—	—
32. South Africa	—	—	—	—	—	—	—	—	—	—
33. Tanzania	—	—	—	—	—	—	—	—	—	—

*Figures are for years other than those specified.

Source: World Bank, *World Development Report*, 1987.

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IMPORT SUBSTITUTION REVISITED IN A DARKENING EXTERNAL ENVIRONMENT*

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In the 15 to 20 years after the war import substitution was the dominant method of industrialisation, both in theory and in practice. In the subsequent 15 years or so, say from 1965–1980, import substitution was heavily criticised and held responsible, particularly by the emergent neoclassical school, for many of the ills and distortions in developing countries. More recently, with the world recession, balance of payments crises, debt crises and rising protectionism in industrial countries a definite reassessment of import substitution is clearly noticeable. The paper argues that such a re-evaluation of import substitution should not be in the nature of a combination of synthesis of IS and EO—the export orientation heavily recommended and praised by the more recent critics of IS. The paper argues that Korea provides a good model of the right kind of synthesis, rather than the market-oriented 'neutrality' between IS and EO now preached by the necoclassicists.

The paper argues that the main trouble with the IS strategy was not inherent in the strategy itself but due to the way in which it was implemented. Recent empirical evidence has shown that since the onset of the first world recession of 1973 the countries which have relied on IS rather than on EO have not done any worse, and for the most recent years the presumption must be that they have done better. The examination of this last proposition should be a high priority for research.

Import Substitution and its Critics

Development economists in the 1940s and 1950s put great emphasis on the necessity of a deliberate, intensive and guided effort to promote and ecourage industrialisation in LDCs. A number of authors including Rosenstein-Rodan, Nurkse, Prebisch, Hirschman and Dobb, while concerned with a variety of issues, argued that a radical transformation of backward economies with limited or no industrial base requires a deliberate and conscious industrial strategy because the market mechanism,

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notably in the context of LDCs, is an inadequate means of ensuring rapid industrial development.

The theoretical rationale for a deliberate industrial strategy, as discussed by those authors, rested on a number of grounds including infant industry, external economies and, broadly speaking, the dynamic benefits associated with industrialisation. The tautological use of 'advanced', 'developed' and 'industrial' countries indicated that industrialisation was not only the end-result but also the 'engine' of development.

Another closely related argument favouring a deliberate industrialisation strategy rested upon the existing structural rigidity in the composition of LDCs' exports and its implications for growth and terms of trade. The Prebisch-Singer (PS) thesis (1949–1950) of a secular decline in terms of trade for primary exporters implied that market forces can work to the secular disadvantage of the poorer countries (identified as exporters of primary commodities) and to the advantage of the more advanced industrial countries (identified as exporters of manufactures) in international trade and investment. It was argued that gains from international trade and specialisation are not equally distributed between the LDCs and advanced industrialised countries because of unfavourable demand, inferior market power and price conditions facing primary product producers while the opposite condition prevails in the case of exporters of manufactures.[1] 'Unequal exchange' and 'dependency' schools were the direct offshoots of the PS thesis.

This thesis argued that unregulated free markets work to the disadvantage of LDCs so that regulation or other intervention (including measures to reduce fluctuations in commodity prices, compensatory financing, or more generally a greatly expanded flow of soft aid to LDCs etc.) are needed to achieve a more equitable and sustainable international system. The failure to establish the ITO appeared to members of this

[1] The empirical (statistical) basis of the thesis has continued to be debated. But the recent authoritative study by Professor J. Spraos (1983) has reaffirmed a qualified version of the thesis, shifting from net barter Terms of trade to the Employment Corrected Double Factoral Terms of Trade (ECDFTT).

Spraos gives the net barter Terms of Trade between primary products and manufactures since 1950. According to his data based on UN statistics, this index of Terms of Trade deteriorated between 1950 to 1970 from 114 in 1950 to 85 in 1970, a deterioration of 25 per cent. Between 1970 and 1977 there was a further deterioration of 9 per cent in the net barter Terms of Trade between primary product and manufactures, excluding petroleum (Spraos, 1980, 'Statistical Debate', p. 123). However, if petroleum is included obviously the picture changes dramatically. For the whole period 1900–1970, Spraos finds generally negative trends for the different series but is doubtful about their statistical significance. However, Spraos agrees that a countercase for significant deterioration could be made (for further discussion on this see also Singer, 1984b). Most recently, Spraos (1985) has conceded much of this in his response to Sapsford (1985) when Sapsford showed that when allowing for the once-for-all upward shift during the Second World War the deterioration is valid for the whole period 1900–1970.

school as a fatal gap in the Bretton Woods system, never filled. Moreover, the thesis by implication called for a deliberate industrialisation strategy as a means of altering the existing pattern of LDCs' specialisation within the international economy.

While the PS thesis was strenuously opposed by 'mainstream' economists it provided the intellectual mainspring for the foundation of UNCTAD in 1964 as well as a general conceptual framework which greatly influenced the 'development dialogue' between rich and poor countries (Maizels, 1984, *IDS Bulletin*, Vol. 15, No. 3).[2]

Industrialisation in the context of this early literature implied import-substitution. It was difficult in 1950 to visualise large exports of manufactured goods from LDCs when they lacked an industrial base and the age of the MNCs had only just dawned. Moreover, import substitution with the help of protective tariffs was the traditional and proved policy for infants (late-comers) in industrialisation. The 'infant industry' argument lent itself readily to generalisation into an 'infant economy' argument.

The critics of import-substituting industrialisation (ISI) often accuse development economists of this school and UNCTAD of a bias in favour of ISI and against export-oriented strategy. They also maintain that too much state intervention including high levels of protective duties relied upon to encourage ISI induces inefficiency and is thus an obstacle rather than an instrument for a viable industrial development in LDCs. On the other hand, it can be argued that the critics do not take into sufficient consideration the impact of external pressures and obstacles on development efforts of LDCs, and that they presume that export-oriented strategy is a real possibility for all LDCs, disregarding the inherent fallacy of composition as well as integral technological and capital constraints in many LDCs.

As regards the first criticism of ISI 'bias', there are two answers to this:

(1) In the 1940s and 1950s the productive structure of LDCs, generally speaking, was narrow and undiversified and hence it was difficult to foresee the growth of manufactured exports from these economies. As late as 1960, in the dawning days of UNCTAD, primary commodities constituted 79 per cent of the total exports of low-income countries and 89 per cent of those of middle-income countries (Singer, 1984, *IDS Bulletin*, vol. 15, No. 3, p. 16). And even in 1980, these shares had only been

---

[2] The original idea of the thesis was subsequently broadened away from concentrating on Terms of Trade, at ECLA under Prebisch's guidance in the direction of a distinction between 'centre' and 'periphery' countries (laying foundations for 'dependency' theories) and by Singer in a 're-visit' in the direction of technological control (leading to the idea of inappropriate technologies in LDCs with harmful employment and income distribution effects and their exclusion from the most profitable dynamic new industries). (Singer, 1975).

reduced to 55 per cent and 63 per cent respectively. In fact, export substitution would have been equally favoured by the ISI advocates—their emphasis was on the S for *substitution*, rather than on the I for *imports*. The real massage or 'bias' was on the last I for *industrialisation*—get out of primary commodities—but *ISI* seemed to be more realistic than *ESI*.

(2) The critics of ISI such as Ian Little et al for the OECD (Little, 1970), Bela Balassa et al for the World Bank (Balassa, 1982) and Krueger-Bhagwati for the National Bureau of Economic Research (Bhagwati, 1978) all tended to disregard or underestimate the importance of a previous phase of IS as a necessary base for subsequent or even simultaneous export-led growth. This is confirmed by the actual experience of the two often-mentioned examples of successful exporters, South Korea and Taiwan. Both countries pursued an IS strategy in the 1950s; and even in the 1960s and 1970s, when substantial emphasis was laid on development of manufactured exports, still a considerable degree of IS took place in a number of industries in both countries (Park, 1981; Luedde-Neurath, 1984; Evans and Alizadeh, 1984). In the case of Korea, it can be shown that IS and export promotion were carefully and consciously interlinked as alternating phases in shifting industrialisation between the different sectors. In the case of Brazil also, exports of manufactured goods were in those industries where large-scale IS had been successfully accomplished (Tyler, 1981; Chenery, 1980). This is not to underrate the importance of export-promotion policies which were introduced in these countries in the 1960s. Nevertheless it is true that such export–promotion policies simply appeared as a way of exploiting the export potential which had been built up during the IS phase. The critics tend to argue that the shift from IS to export orientation was the result of enlightenment and of bad experience with IS. Yet the shift can equally be presented as a rational and natural sequential development in the progress of industrialisation (Singer,1984, *IDS Bulletin*, Vol. 15, No. 3). (It can also be presented as due to a shift in the external environment in a more expansionist/optimistic direction at around 1960, as discussed in more detail in a subsequent section; this shift has been sharply reversed more recently.) Prior learning about the technology and product via production for the home market is usually considered a prerequisite for effective competition in world markets for manufactured goods; hence the emphasis by List, Hamilton et al. on the 'transitional' of temporary nature of infant protection. Also IS was often needed to provide the necessary volume basis for competitive export production. Seen in this light, IS and export promotion are complementary rather than alternative strategies.

There is also a point of methodology here. If country A shows better growth and development when it moves from ISI to EOI (and vice versa), the critics take this as evidence for the inferiority of ISO and the superiority of EOI. But another possible explanation is that the ISO phase is a necessary 'infrastructure investment' type of outlay which is needed to prepare the ground for the extra EOI 'push'—which then provides the 'pay-off' in terms of faster growth.

Turning to the second criticism of ISI, i.e. too much intervention and interference with the play of market forces and consequent departure from comparative cost principles, neo-classical critics of ISI have maintained that too much intervention not only has led to bureaucratic inefficiencies, corruption and delays but also that the imposition of a high level of protective duties for import-substituting industries has induced the establishment of high-cost inefficient industries; allowed overvaluation of domestic currency; and led to the neglect of agriculture and other sectors, etc.

The policy implications drawn from this analysis are that protective duties should be substantially reduced, the exchange rate should be devalued and the play of market forces should be encouraged. These policies are supposed to be a prerequisite for successful Export Oriented Industrialisation. Of course EOI is not a crude laissez-faire strategy, but also requires appropriate government measures, incentives and subsidies to encourage exports, and to provide equal economic incentives to production for domestic and foreign markets (Kirkpatrick et al, 1984; Krueger, 1983); also World Bank Report, 1984, 'Toward Sustained Development' (TSD Report). While the extent as well as the duration of government intervention, from this perspective, should be possibly reduced[3], the main requirement is a change in its direction, and 'degrees' of interventionism are not easily measured or compared. But criticism of intervention and statism is not identical, although it may overlap, with criticism of ISI.

The fact that IS policies in certain instances have led to 'inefficiencies' and other undesirable side effects should not be interpreted to imply that extensive state intervention is not of crucial importance for a rapid and viable industrial development. Excluding special cases of city states like Hong Kong and Singapore the industrial development of other newly industrialising countries (NICs) has been accompanied by a substantial degree of state intervention, far beyond what is often realised by the critics of ISI. But it must certainly be acknowledged that that there are many other kinds of government intervention which may be more important and more constructive than 'distortion' (or correction) of market prices.

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[3] The critics of ISI have more recently abandoned the extreme position developed since the late 1960s which placed a largely unqualified faith in the market's ability to rectify the problems of LDCs. For instance, compare Little et al. (1970) with more recent reviews of this subject including the World Bank Report on sub-Saharan Africa 1984. However, despite such recent shifts, concerning the importance of state intervention they still maintain that the basic problem in IS strategy was is a failure to allow market forces to exert more influence over resource allocation. For an interesting discussion on this point see Bienefeld (1985).

The high degree of intervention and 'statism' which has prevailed in Latin American NICs, including Brazil and Mexico, is well known. Moreover, the detailed study of economic policy in most NICs shows that industrial development has been accompanied by a high degree of centralised planning and government regulation, with strict import, banking, credit and foreign exchange controls (Kirkpatrick, Lee and Nixson, 1984, p. 199; Luedde-Neurath, 1984; Park, 1981). South Korea 'is a country where a strong state overrides market forces without hesitation, with an effective tightly-planned economy, with strict controls, an essentially nationalised banking system, and a private sector organised in government-sponsored trade associations for easier control. It is as far removed from free market policies as it is possible to be.' (Singer, 1984a, p. 16). The government's overwhelming control over the banking sector provided the most important tool in influencing the direction and distribution of investible funds by varying the interest rate charged according to the field of investment, depending on the priorities attached to the different lines of economic activities.

In this respect it is worth remembering that in both South Korea and Taiwan, although import restrictions on average were substantially lowered since the early 1960s nevertheless most import-competing industries remained highly protected during the period of rapid growth of manufactured exports in the 1960s and 1970s. A statistical division of increases in domestic output as between import substitution, additional exports and 'indigenous increases' shows a continuing high share for the first category as compared with the second. Korean planners have also been consistently concerned to reduce the import content of exports. That is to say that ISI applied to exports. The high import content of exports, e.g. compared with Japan, also makes the net export performance, and the contribution of exports to the balance of payments, less impressive than the gross figures suggest. The legal tariff rates on textile fibres, fabrics and products, leather products, rubber products, and wood and furniture products (which then constituted major Korean export commodities) were in the range of 50 per cent to 200 per cent throughout the period 1964–1974 (Hong, 1977, p. 138). Also, quantitative restrictions on imports were quite substantial. In 1970, out of 1312 basic items, 524 were restricted and 73 were prohibited (Frank et al. 1975, p. 59).

Thus it is not surprising that S. S. Park, a Korean economist, while summarising the relevance of Korean experience concludes that 'one lesson is that the Korean experience hardly provides a model in which the functioning of a free trade regime, or operating close to such a regime, assure efficiency in resource allocation and reasonable growth as well'. (Park, 1981, p. 115).

Likewise in Taiwan, rapid growth of the industrial sector in general and of manufactured exports in particular during the 1960s and 1970s was not accompanied by the adoption of a free trade regime, or anything approaching it[4]. By the late 1970s still more than a quarter of imported items were subject to quantitative restrictions and import control (Balassa, 1981, p. 415).

The purpose here is not to provide a blanket argument for any sort of state intervention, or to dismiss the fact that extensive state intervention in a number of instances has not been particularly successful in the development of a viable industrial base. Nevertheless it is becoming increasingly clear that it is not the extent and the duration of state intervention which determines the success or failure of ISI or EOI but rather it is the economic-political situation the state faces both internally and externally, its political commitments, and its administrative capacity which matters (Kirkpatrick, Lee and Nixson, 1984, p. 194). The state is not a *'deus-ex-machina'* but neither is the international market. Which is the better guide, or rather which combination is best, depends on country-specific, or even sector-specific, conditions.

Effective and efficient implementation of any trade policy, whether IS or EO or a combination of both, depends on the organisational ability of the state as well as the economic and political peculiarities of any given economy. This point has been well demonstrated by Datta-Chaudhuri in his comparative study of South Korea and Philippines (Datta-Chaudhuri, 1981, pp. 47–79). Both countries are similar in terms of population size and in the early 1960s the two countries also had comparable levels of GDP per capita. Moreover, both countries, Datta-Chaudhuri argues, adopted more or less similar trade policies in the 1950s and 1960s, in the sense that in the early 1960s both countries shifted their trade policies to encourage manufactured exports. Nevertheless the performance of the Korean economy in terms of overall growth, employment generation, rise in real wages and particularly expansion of manufactured exports was far more spectacular than that of the Philippines in the 1960s and 1970s.

In explaining the differences between the two growth processes, Datta-Chaudhuri outlines certain factors which might have stronger explanatory power than trade policies, including the relation between the state and the industrialist class, the administrative capability and political commitment of the state to formulate carefully and implement effectively an appropriate industrial strategy, etc. In the case of South Korea, the state since the early 1960s devised a discretionary and selective regulatory system to guide the allocation of resources in the desired direction.[5] Also, export promotion policies were accompanied by a close collaboration between the state and a relatively well-developed industrialist class, so that the development priorities were defined in consonance with entrepreneurial interests. However, in the case of the Philippines the dominant class with which the state collaborated was the agrarian hierarchy and also the efficiency and planning capacity of government and administration were far inferior to that of South Korea.

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[4] Balassa has himself pointed out that protection of a large magnitude in the form of tariffs as well as quantitative restrictions prevailed in the 1960s and 1970s although there was tariff redundancy in most cases (Balassa, 1981, pp. 402–406; 415–416).

[5] The government's overwhelming control of the banking sector provided the most important tool in influencing the direction and distribution of investible funds by varying the interest rate charged according to the field of investment.

Wanted: A new synthesis of ISI and EOI

The shift back in thinking 'towards favouring the domestic market', the 'avoidance of domestic inequalities', 'less emphasis on the market as sole allocator of resources' is particularly marked in Latin America which has suffered more in the recession and is more threatened by the debt crisis than Asia. All the above objectives in quotation marks are taken from a publication by PREALC (the Latin American branch of the ILO World Employment Programme) which is typical of this recent shift in thinking ('Beyond the Crisis', PREALC, ILO, 1985). There is particular emphasis on the 'multiple distortions' of markets there which implies that concentration on the removal of one or two key distortions (e.g. exchange rates or subsidies) may well increase rather than diminish overall distortions and the difficulties of reaching an optimum solution.

At the same time, there is also emphasis on avoiding the errors of the past. Any new domestically-oriented industrialisation strategy must pay more attention to monetary, price and balance of trade and payments implications than the old ISI did. It must also encourage exports more. In other words, it must be a synthesis of the old ISI and the more recent EOI, both of which have been proved to be flawed, at least in the case of Latin America; more a move forward to something new than a return to the old. In this sense also, the debate between the proposals of ISI and EOI as exclusive alternatives is dangerously misleading. We need ISIEOI, a strategy which combines the best elements of both and utilises the complementarities of the two.

Paradoxically, both the old-style ISI and the recent attempted EOI resulted in an inefficient industrial structure, with insufficient vertical integration and horizontal linkages. The future synthesis must pay more attention to the structure and quality of industrialisation as distinct from its simple volume and simple industrialisation ratios. The purely quantitative Lima target (25 per cent of global industrial production for the LDCs) was also vulnerable in this respect. The PREALC report criticises the 'disarticulated structure' of industries resulting from ISI and the low weighting of the 'modern industries'.

In fact, an ISI which results in such a 'disarticulated structure' and absence of modern industries fails in the purpose of ISI which was put forward as a natural escape out of primary commodities with their unfavourable price trends. The terms of trade of the 'old' industrial consumer products versus the 'new' and capital goods, may be no more favourable than those of primary commodities; hence old-style ISI often proved a dead-end way out of 'unequal exchange' (Singer, 1975). The watchword of the new synthesis must be 'Integrated Industrialisation'.

The PREALC study also rightly lists neglect of domestic food production leading to increased dependence on food imports (and food aid) as one of the weaknesses of old-style ISI. But here the advocates of EOI also find themselves in a dilemma. They advocate, like everybody else, greater emphasis on domestic food production and elimination of 'urban-bias' distortions. But if IS is right for food, why not for manufactures and specifically capital goods and 'modern' products? No really convincing answer has been given (or rather, the question has not been asked); and in the absence of an answer there must be a lingering suspicion of assignment of LDCs to be hewers of wood and drawers of water. The EOI tools of exchange devaluation and removal of food subsidies may serve to reduce 'urban bias', but more in the direction of increasing exports of food and agricultural products rather than food production for domestic consumption. The priority for domestic food production, although during the EO ascendancy labelled as removal of a distortion debited to ISI policies, is in fact a part of a return to a reformed IS. But undoubtedly the present dependency on food imports is also a consequence of unenlightened ISI. It is perhaps ironic that the removal of a consequence of ISI requires now a return to import substitution—but such complexities are part of the new synthesis.

Similarly, there is an irony in the relationship between a renewed emphasis on the domestic market and the basic needs strategy. Superficially, the two go well together. The poor are part of the domestic market; their needs are for the simple goods which—except for food—are usually home-produced, sometimes in the informal sector; their frustrated buying power potential, or lack of 'entitlements', represents a powerful opportunity for a new ISI, or at least inward-oriented, push. Yet the emphasis on basic consumption goods may again lead to the 'disarticulated structures' with lack of vertical integration. So what is needed is a deepening of the basic needs concepts which encompasses the activities indirectly needed and related to basic needs. In other words, basic needs must be the orientation of the whole economy, a matter of macro-economic management, rather than a selection criterion for specific commodities to be produced. When the domestic market is the engine of growth, and when incomes or entitlements are equally distributed, we can be philosophical as between sectoral and product priorities—by all means let the market decide. That must be the objective for the new enlightened ISI. In such an economy, the production of exports also serves the same purpose since the foreign exchange earned will be used for the better satisfaction of basic needs. So again the alleged cleavage of ISI or EOI vanishes, and the desired synthesis emerges as blending both—ISIEOI.

The new industrial strategy must be less dualistic than either ISI or EOI, both of which have shown themselves capable of creating pockets of modernity, with more links abroad than domestically and many of the inputs imported, while leaving the poorer section to survive with an 'informal sector' capital-starved and discouraged. The new synthesis should blend the two technologies into an intermediate technology, or blend them purposefully together in both intra-firm and inter-firm linked structures. New technological advances have created opportunities in this direction, and their exploration in the framework of the new industrial strategies now widely groped for in Latin America and elsewhere opens up a big new agenda (Boon, 1983).

What is suggested here is not so much an industrialisation strategy which is 'neutral' as between IS and EO. This is the formulation favoured, among others, by the World Bank (see, for example, the 1981 World Development Report). Rather, what is suggested is a systematic combination of IS and EO, with a different emphasis on IS and EO at different periods and for different sectors. In the nature of things in developing countries, the sequence from IS to EO will be more frequent than the reverse, both in time and for given sectors. But EO itself will also lead to new opportunities for IS, to reduce the import content of exports and increase linkages from the export sector to the rest of the economy, preventing dualism and a disarticulated industrial structure.

In fact, certain successful exporters, including South Korea and Taiwan, relied upon high and ununiform rates of effective protection, far above 20 to 30 per cent and sometimes as high as 100 per cent effective. Westphal (1981) in explaining the difference in industrial performance between these two and those developing countries which pursued more inward-looking policies argues that it is not so much the magnitude of protection but rather the selectivity of infant industry protection and attention to promotion of export growth which distinguishes the former countries from the latter.

He argues that promotion of fewer infant industries at a time can be more conducive to a rapid achievement of international competitiveness than a strategy of 'wholesale import substitution' which accompanies simultaneous protection of a large number of infant industries from the start. Greater selectivity permits scarce investment resources to be concentrated in one or a few sectors at a time; it also allows the concentration of scarce entrepreneurial resources and qualified technical personnel and thus avoids spreading the high-level manpower so thinly that no industry has adequate technical personnel. Greater selectivity 'also accompanies delaying the construction of initial plants until the market has grown to an appropriate size'. In other words, it is the quality of import substitution which counts, rather than its volume.

External environment and external pressures

The debate about ISI versus EOI is, in one sense, misplaced and hence partially senseless. Probably the best position in the light of available evidence is that neither ISI nor EOI is the superior strategy in any overall and absolute sense, but rather depend for their relative advantages and disadvantages on assumptions about the external situation facing LDCs. The early advocates of ISI, consciously or unconsciously, made pessimistic assumptions about global growth and trade policies of industrial countries; such pessimistic assumptions were natural around 1950 when the more recent experience of the Great Depression of the 1930s was put together with the disruption and heavy setbacks caused by the war. Similarly 20 years later, by 1970, it was equally natural for critics of ISI to project the favourable external environment of the 50s and 60s into the future. Perhaps both schools of thought were right on their own different assumptions. Given the recent much less favourable international outlook, it is as natural that ISI should have regained a great deal more respectability. Apart from explaining some of the fluctuating fortunes and fashions in ISI versus EOI, such a position would also indicate that the optimal industrial strategy in LDCs would be something that is flexible between ISI and EOI: switching emphasis towards ISI in times of global recession and towards EOI in times of global prosperity. It would also indicate that the choice between the two strategies is much more a matter of what is ultimately a *political* judgement about the state and future of the world economy, rather than a matter of firm *economic* analysis as it has usually been debated in the past.

Fortunately, we can confirm this approach as a result of a recent careful quantitative analysis (Kavoussi, 1985). Mr. Kavoussi looked at the period 1967–1977. Dividing it up into a period of favourable market conditions (1967–1973) and unfavourable market conditions (1973–1977), he found that when a sample of some fifty developing countries was divided by certain criteria into free trade-outward oriented or trade restrictive-inward oriented, the correlation between export orientation and growth performance in the first favourable 1967–1973 period showed superior performance by the export oriented countries; but in the less favourable 1973–1977 period there was no evidence of any such correlation. In his own words:

> "... free trade appears to enhance growth only when external demand is favorable. When foreign markets are slack, the association of the economy's growth with export-orientation tends to be quite weak. This result seems to imply that when free trade produces a moderate expansion of export earnings (when external demand is

> weak), the gains from openness are likely to be cancelled by its negative effects. On the other hand, when export-orientation leads to an exceptionally rapid expansion of export earnings (when external demand is strong), the benefits of openness clearly outweigh its costs."

He concludes:

> "Different phases of the cycles of global economic activity require different commercial policies. While export-oriented policies can produce substantial gains during the phase of strong international demand they may be self-defeating if followed by a large number of developing countries when world markets are depressed." (p. 391)

It is a pity that such an analysis is not available for say 1979–1983 when the external situation was even less favourable than 1973–1977. One can only surmise that for that period there may well be a definite finding that inward-oriented LDCs did better; the cases of India and China would seem to support such a conclusion. It is hoped that the results of such a more recent analysis will soon be available.

On Mr. Kassouvi's findings that there is little difference in performance between inward and outward-oriented countries during unfavourable external periods, one may also surmise that in that case the ISI strategy may well appear to national decision-makers safer and more appealing on grounds other than growth rate arguments. ISI increases a country's national control over its own destiny and holds out the prospect that the growth could well be more stable from year to year, being less dependent on external conditions. On the other hand, one can also see that to an internationalist bureaucracy such as the one of the IMF, EOI may be preferable even in the absence of a superior growth performance since international integration is treated as a good thing in itself. This difference may well explain a good deal of the controversy between the IMF and many LDC governments on the question of the right way of adjusting to debt-induced balance of payments pressure.

Another reason why unfavourable external conditions have led to a revival of ISI strategy is the strong emphasis, recently fortified by the African drought and famine, on the need for developing countries to reverse the heavy shift from net food exports to net food imports during the post-war period. This near unanimous emphasis on higher priority for domestic food production and restoration of food security and food sufficiency in fact amounts to a recommendation of import substitution of IS if not of ISI. Some of the sharpest critics of ISI are also among the keenest advocates of higher priority for domestic food production. There is nothing logically inconsistent in this position: one can stress the advantages of IS in agriculture and its disadvantages in industrialisation. However, it does throw a certain onus on the critics of ISI to explain what exactly are the differences between the two sectors which account for advocacy of such different strategies for them.

The critics of ISI also often overestimate the freedom of LDCs to chose their industrialisation strategy and underestimate the significance of external pressure in influencing the pattern and direction of resource allocation. Several problems which the industrialisation process of LDCs faces may be largely a result of the pressures exerted on LDCs by the imperfect markets of the advanced industrialised world (Bienefeld, 1985). Donors and foreign investors might represent interests that could conflict with the national interest of a developing country. Donors, whether international agencies or governments, might attach tying and other types of conditionality on utilisation of aid/loans; also inappropriate (e.g. too capital-intensive) design and selection of their projects might substantially contribute to inefficiency of investible resources. Similarly foreign investors might pressurise the recipient government to implement policies, including prolongation of a high level of protective duties, to ensure a high level of profit. In such conditions, debates on 'optimal industrialisation strategies' may be beside the point, and strategies of coping with such external pressures may be more relevant.

The importance of external pressure is particularly pronounced in the case of those LDCs with relatively weak economies, with limited financial resources, industrial base, infrastructure and technological expertise. Such economies may lack an adequate bargaining power vis-a-vis donors and foreign investors and at the same time may be highly dependent on international finance and expertise for the implementation of their development plans.

In a recent World Bank report on sub-Saharan Africa, which is concerned with the failure of IS strategy there, it is acknowledged that donors must take some responsibility for the current difficulties including the inappropriate design and selection of their projects and the lack of co-ordination among themselves which all contributed to the low rates of return on investment (World Bank, 'Towards Sustained Development', 1984). Nevertheless the report presumes that financial agencies and expertise are primarily neutral and it fails even to consider the possibility that such agencies might represent interests that could conflict with national interest (Bienefeld, 1985).

Furthermore the imperfect markets of the industrialised world can exert a considerable degree of pressure on development efforts of all LDCs including the NICs. The severe debt-servicing problems of LDCs (including those of NICs) due to high real rates of interest which originated among other things from monetary and fiscal policies in advanced industrialised countries since the mid-1970s, is a well-known example of an external obstacle to EOI, by reducing import capacity for investment in export industries, or indeed any kind of effective industrialisation. This creates settings in which the idea of a 'choice' between different industrialisation strategies may become quite unreal.

Export-oriented industrialisation and its prospects

The alternative industrial strategy which is proposed by the critics of ISI is an outward-looking strategy of EOI. There is no doubt that development and expansion of manufactured exports are of crucial importance for LDCs. Apart from the well-known 'vent for surplus' principle (i.e. the surplus part of the domestic production, for which there is no domestic demand, can be exchanged for those goods and services required by the domestic economy, through exports), a country can overcome obstacles of a limited domestic market in those lines of industries which are highly susceptible to economies of scale. Also by competing in the world manufactured markets, industries would be forced to attain a high standard of efficiency and product quality.

Nevertheless the viability of EOI strategy for LDCs as a whole must remain subject to controversy notably in the international context of the coming decade. The question is not whether EOI is *desirable* but whether it is *possible*.

To begin with, it is a fallacy of composition to assume that what is possible for one or some of the LDCs or NICs can work for all, or the great majority, if all or most LDCs seek to pursue export-led growth at the same time. A recent analysis has indicated, on the basis of a simulation exercise, that if all LCDs in the mid-1970s had the same export-intensity as South Korea, Taiwan, Hong Kong and Singapore, adjusting for differences in size and level of industrialisation. this would involve a more than 700 per cent increase in Third World manufactured exports (Cline, 1982). The analysis concludes that this would result in untenable market penetration into industrialised countries and protectionist backlash would be inevitable. Hence 'it is seriously misleading to hold up the East Asian G-4 (Gang of Four, i.e. Hong Kong, Taiwan, South Korea, Singapore) as a model for development because that model almost certainly cannot be generalised without provoking protectionist response ruling out its implementation' (Cline, 1982). Even present market shares provoke protectionist response—is it conceivable to increase total trade in manufactures seven times over, to maintain present market shares? Access to the markets of OECD countries, which are the major markets for LDCs' manufactured exports, is of considerable importance for the successful implementation of EOI strategy. Although there is scope for the expansion and promotion of South-South trade (to which we shall turn soon), nevertheless entry into the markets of advanced industrialised countries will remain of crucial importance for some time. It is the continued likelihood of this market access by LDCs which requires careful assessment, notably in the coming decade.

With the drastic decline in the rate of global economic growth and global trade growth since the late 1970s the prospect for pursuing an EOI strategy in the coming decade clearly looks less promising for other LDCs which were not in 'the first wave'—even if we consider that the first wave is safely 'home'.

In contrast with the unprecedented expansion of global trade between 1950 to the mid-1970s, as the 1970s wore on the rate of global economic growth as well as the rate of growth of world trade declined. And trade seems highly sensitive to the rate of growth, with a multiplier effect (Singer, 1983). The post-war expansion of global trade was greatly facilitated by a significant reduction in trade barriers administered by GATT. However, this situation has changed considerably since the late 1970s. In any case the reduction in trade barriers was so considerable that it was almost by definition a 'once-for-all' rather than continuing expansion factor.

Although there has been a general commitment to reduce tariff barriers, nevertheless 'non-tariff barriers' (NTBs) have served as the main form of protective measures in major OECD countries in recent years. GATT has recorded over 600 different types of NTBs; UNCTAD, which recently began to compile an inventory of NTBs, within two years recorded over 21,000 product-specific measures and a similar number of general measures (Kaplinsky, 1984, pp. 77–78). Furthermore, as in the case of tariff measures, NTBs appear to be disproportionately directed at LDCs' exports, and increase as the degree of processing increases (UNCTAD, 1983). Moreover, protectionism appears to be particularly high in the labour-intensive sectors which constitute most of LDCs' manufactured exports, and are particularly important to them for employment and more equal income distribution, as emphasised by the critics of ISI.

If the economic problems now confronting the major industrial countries continue for some years, which seems a distinct possibility, the protective trade barriers are more likely to grow than decline.

In addition to protective measures another factor which may adversely affect export prospects of LDCs is radical technical change and diffusion of electronic-based automation technologies (Kaplinsky, 1984). With the development and diffusion of these new technologies, which is largely a phenomenon of the post-1970 period, the comparative advantage of LDCs in presently labour-intensive sectors may be considerably weakened. One of the impacts of automated technology is a general reduction in labour input which in turn undermines the advantage of low wage costs in LDCs.

South-South trade

At present, developing countries are highly dependent on developed countries both for their export markets and for their imports, with trade among developing countries accounting for only a quarter of their total exports (and imports) (Adams, 1983). Nevertheless, with a growing tendency towards protectionism in the major developed countries, and also with lack of progress in North-South discussion on development of trade relations on the basis of a trading system more favourable to the South as part of a NIEO, LDCs are now bound to look elsewhere and increasingly among themselves for markets if the growth of their trade is not to be stifled.

Intensified South-South trade can be either treated as outward-looking or EOI (from the viewpoint of the individual LDC) or as inward-looking or ISI (from the viewpoint of DCs). That question is as insoluble—and as sensible—as debating whether a glass of water filled to the half-way mark should be described as 'half-full' or 'half-empty'. A lot will depend on whether South-South trade is developed to substitute for North-South trade (in which case it can reasonably be described as inward-looking or ISI) or to be additional or complementary (when it is reasonably considered as part of, or a stepping stone to, outward-looking EOI). As a general proposition, much of the expansion of South-South trade advocated by UNCTAD would be of the latter type and to the advantage of the North as well as the South (Singer, 1983). But the main critics of ISI often include S-S as another manifestation of an inward-looking spirit and of a failure to accept integration into the world economy. Certainly, there is little enthusiasm for S-S among the proponents of EOI, while the proponents of ISI have seized upon this chance of adding the advantages of international trade to the case for self-reliance—as indicated by the phrase 'collective self-reliance'. So S-S has become more or less a part of ISI, by a process of self-selection, and is thus here included.

Developments during the 1970s suggest an emerging tendency towards the intensification of inter-developing countries' trade relative to their trade with developed countries. The share of developing countries' exports, excluding petroleum, going to other developing countries increased from 19.2 per cent in 1970 to 26.2 per cent in 1978. In particular, a number of developing countries including the East Asian 'Gang of Four', Brazil, Mexico and a few other LDCs which have emerged as exporters of manufactures, have been able, to a growing extent, not only to penetrate the markets of OECD countries but also to capture an increasing share of markets in other developing countries.

Promotion of economic co-operation among developing countries (ECDC), including expansion of South-South trade, has been one of the main concerns of UNCTAD since the early 1970s although there are a number of major obstacles for attainment of this objective. Some of these obstacles are posed by the present policies of developed countries and some by the policies of developing countries themselves. Among the first type of obstacles are the tying of aid and the rules of origin in the General System of Preference (GSP) and other preferential schemes (Singer, 1983, p. 322). The endemic balance of payments problems which most LDCs face, and their dependence on international financial institutions, have provided through tied aid and other forms of restrictions pressures in favour of North-South trade and against LDCs sources of supply.[6]

Among the second type of obstacles are trade policies of developing countries themselves. For instance, those products which are the most promising for the expansion of South-South trade, including light consumer goods and semi-finished manufactures are also those which are highly protected by tariff as well as 'non-tariff barriers' in developing countries. Moreover, consumer preferences are often biased against products of other developing countries, sometimes quite irrationally.

Of course important steps have been taken already by developing countries themselves as manifested by the initiation of a number of economic co-operation and integration schemes at the regional and similar levels which include the great majority of developing countries as members of one or other of such schemes. In most of these schemes the principal approach to trade co-operation has been the gradual liberalisation of trade barriers to 'intra-group' trade. Nevertheless the full potential for such co-operation among LDCs may take some time to be realised, and the landscape shows many disputes and lack of implementation, with lack of finance a main reason for failure to put sufficient steam behind ECDC.

Concluding remarks

The sluggish growth of the world economy and the rising trend towards protectionism, or what has been called the 'new protectionism'. will adversely affect export prospects of LDCs. It might be argued whether the same considerations do not also apply to protectionism on the part of LDCs. We cannot do better than reply to this in Gamani Corea's words:

"The answer has to be that there is no exact parallel between the two phenomena. The rationale for protectionism in developing countries has been well recognized in terms of the "infant industry" argument—extended also to take into account the wider limitations in terms of infrastructure of a growing but weak economy. In the long term, such protectionism, which would still be temporary but of much longer duration, can be seen as contributing to growth and efficiency. The same cannot be said for the merits of protecting ageing industries—except temporarily as a means of smoothing out the frictions that stand in the way of adaptation to change. Protectionism in the developing countries could of course be carried too far—to the detriment of growth and efficiency in these countries, and it is right to draw attention to this danger. But here the criticism is of the incorrect use of the instrument rather than of the instrument itself. From the international point of view there is another, even more important consideration. Protectionism imposed by the industrial countries can be directly restrictive to world trade by reducing the earning capacity of developing countries and hence their capacity to import. Protectionism imposed by the developing countries does not have quite the same effect since these countries tend in any case to spend all their export earnings, and more, on imports—mostly from the developed countries. The foreign exchange saved by restrictions on some types of goods is utilized for imports of other types. Hence protectionism has more of an impact on the pattern of imports than on their total.

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[6] For instance, India is negotiating a loan agreement with the World Bank in 1981, for up-grading of the Indian railway system, faced a substantial degree of pressure from the World Bank to import computer equipment from one of the major developed country suppliers. At the same time, the Indian government felt that its own computer industry could supply the necessary equipment (cited in Adams, 1983, pp. 124–125). The World Bank in fact recognises the principle that domestic procurement should be encouraged by allowing a 15% price preference to domestic suppliers before assessing the best-value offer for their projects. But one may question whether a 15% preference is sufficient to allow for the dynamic comparative advantage, learning effects, employment and income effects etc. of domestic procurement. Moreover, apparently the World Bank fails to extend the 15% preference rule to other developing countries which could encourage South-South trade. (I am indebted to my colleague Adrian Wood for clarifying World Bank policy on procurement.)

The entire question of market access and how to improve it is of course the central issue of the multilateral trade negotiations. It remains to be seen how far these negotiations will succeed in improving the access of developing countries to the markets of the industrialized countries. (1979, p. 119).

However, there is little likelihood that in the present international context multilateral trade negotiations will deal adequately and decisively with the problem of the new protectionism. Hence ISI will still have to play a significant role in the industrialisation process of LDCs, notably in the case of those developing countries which are in the very early stage of development.

The point made by Corca, that import substitution affects 'the pattern of imports more than the total' is of great importance. When thought through to its logical conclusion, it indicates that the identification of ISI with 'inward-looking' policies can be misleading. 'Inward-looking' policies are enforced upon the developing countries by the foreign exchange bottleneck, intensified in recent years by falling commodity prices, debts and by lower growth and protectionism in industrial countries. In other words, the critics of ISI would be well occupied in suggesting changes in the external environment as well as in the policies of developing countries. Some do, but others don't. EOI and NIEO should be natural allies. It is ironic that we find them so often on opposite sides of the fence.

One of the well known difficulties with ISI is the difficult nature of transition from the early phase, the assembly or fabrication of consumer goods, to the production of intermediate inputs and capital goods or expansion into export markets, or a combination of both. ISI is a highly sequential process, yet realisation of sequences beyond the easy or early phase has proved to be difficult in many instances (Kirkpatrick and Nixson, 1983, p. 12). But EOI can also meet rising protectionist resistance increasing with successful penetration. A plague on both your houses?

The 'mainstream' economists have focused on protective trade regimes as the main underlying reason for the difficulties with ISI. They have argued that restrictive trade policies give rise to the establishment of high-cost industries which are not able to compete in the world market. Moreover, these industries cannot achieve vertical integration due to the limitations set by the small size of the domestic market in the case of intermediate inputs and capital goods which are highly susceptible to economies of scale.

However, one can equally argue that the difficult nature of transition beyond the first stage reflects an inappropriate choice of industry rather than an inescapable feature of protective trade regimes *per se*. In other words, the choice of the industry the state protects and promotes is of great importance so far as the future viability of any industrial strategy is concerned. There is no doubt that basic economic principles including size of the domestic market, the level of technological development of the country in question, resource endowment, etc. require careful consideration for an appropriate choice of industries. In other words, the difficulties arising from the transition of ISI to higher stages are not inevitable provided the industries which are protected and promoted are not 'white elephants', without export prospects or possibilities to grow into vertically integrated industries, and/or develop dynamic linkages.

In this respect the knowledge and organisational and administrative abilities of the policy-makers to make and implement the right choices both in terms of industries as well as the package of policies are of considerable importance. Also the political commitment of the state not to surrender to pressure groups, which for their own sectoral interest are in favour of a particular industry (regardless of its appropriateness for the national economy) is another important consideration. The hotly debated level and extent of state intervention is perhaps less important than the much less debated question of quality, consistency and administrative competence (as well as political support) which state intervention can enjoy, as well as the policy tools at its disposal.

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ENERGY RESOURCES TECHNOLOGICAL CHANGE AND ECONOMIC INTERDEPENDENCE

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The world economy today is characterised by international dualism—it is divided between developed and undeveloped economies. The former are marked by dynamic technological change and the latter by helpless dependence on technology transfer. The question of energy issues and economic interdependence, therefore, can be placed in its proper perspective only with an explanation of the relationship of the above two phenomena with changing energy use patterns (i.e., from labour intensive localised wood fuel and coal to capital intensive oil and nuclear), technological change and economic growth.

Great differences in per capita incomes or standards of living, however measured, exist between the different countries at the present time, and show signs of increasing. The inter-relation between the richer and poorer nations in the world economy is such that rapid growth of the former is only doubtfully helpful and is possibly positively harmful to the development of the latter[1]. This 1970 observation, though dated, is still perfectly applicable to the modern world economic structure.

The processing of human resources into human capital—the basic factor of production in the developed world today—is functionally related to the rapidly changing energy resources from coal to oil, to nuclear and backstop fuel. According to Kuznets, the most important capital of an industrially advanced nation is not its physical capital, but its human capital, its scientific and technical knowledge, resulting from improved education and training.. It might even be possible for technological progress to increase output rapidly without any addition to the stock of capital goods. The growth of applied scientific knowledge must account in a large part for unusually rapid rates of economic growth in recent centuries[2].

The processing of human resources into human capital in the course of economic development has been confined mainly to the developed countries. In the Third World a tiny island of human capital, surrounded by the vast sea of human resources, has been created as a result of technology and knowledge transfer from the industrialised nations. Obviously, human capital in developing nations has not evolved through processing of their

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own human resources. Had it been so, the proportion of human resources could not be so high and such a high proportion of human resources (over 65 per cent of labour force) could not be left behind in the primary activities.

It became increasingly obvious that economic growth could not be adequately understood in terms of the use of more and more physical input; rather it had to be understood in terms of learning to use inputs more productively.[3] When we realise this, technological change as the source of increasing resource productivity becomes an important factor in economic growth and in Capitalist economies market determines technological change and with it energy use pattern.

More Productive Energy Source or More Productive Use of Energy Resources?

When we examine the energy issues from the perspective of world development and economic interdependence, the questions that trouble us are: should we concentrate on developing a more productive, domestically producible, energy source, like nuclear energy, back stop fuels etc. or should we make more serious effort towards using available energy sources like oil and coal more productively? The first alternative has advantages: more efficiency, less labour use, costly energy. However there are concomitant difficulties of limited market and more wastage of resources in terms of under-utilisation and unemployment.

The second alternative—using existing resources more productively—would mean greater employment, knowledge development and labour productivity. In due course the result would be the development of more productive energy resources without having to leave earlier resources such as human energy, coal or oil rotting under-utilised. This conclusion is reinforced by the world's premature switch from coal to oil and then later back to coal. The oil crisis forced most economies to revert partially to coal as one of the major sources of energy at a time when labour had become too expensive in all developed economies to use coal efficiently as an energy source. If the switch to oil had been delayed, new or more productive utilisation of coal would have raised the level of productivity of labour, which was relatively cheaper at the time.

The resulting development of skill and infrastructure would have made world energy production smoother instead of creating conditions for permanent international dualism. Market motivation at the cost of social and human development played the dominant role in achieving short-term gains (of affluence of the 1960s and early 1970s) followed by long-term problems of unemployment and under-utilised resources. Technological change in the industrialised world has had to pass through two phases of factor utilisation with economic growth i.e. first extensive phase followed by intensive phase—the result of a combination of economic development and population growth, on one hand, and consequent changes in technology and energy use, on the other.

When an economy evolves through these extensive and intensive phases, its energy use pattern passes through labour intensive phases (e.g. human and animal energy, wood fuel to coal) and capital intensive phases (e.g. from coal to oil to nuclear). All developed economies have passed this first phase long ago, and are now in their mature stage of intensive growth which is indicated by its intensive energy use phase.[6] They have reached this phase via an extensive phase when demand for labour began to exceed supply of labour, necessitating the use of science in production since the 1860s,[7] and quality labour and capital intensive energy.

In a free enterprise market system, the profit motive determined the production function and technology, with energy use patterns which gradually resulted in the dominance of cheaper oil replacing coal as the main energy source, even when coal was abundantly available. The approaches to technological change at that time did not result in more productive use of coal and labour. It has been pointed out recently that during the ten years 1962–72 energy prices rose more slowly than the unit cost of labour. This was a period characterised by the rising real per capita incomes. These price and income effects led to changes in the production process itself; energy became increasingly an attractive substitute for other inputs, particularly labour. Various econometric studies suggested that substitutions such as capital and energy for labour were quite price sensitive.[4]

Two important recent developments in the energy area have engaged the attention of academics in general and economists in particular. One is the bleak prospect noted by the Club of Rome Conference in 1968 of resource scarcity at the high rate of economic growth of 1960s and 1970s. The second development was the formation of the OPEC cartel and the subsequent supersonic rise in oil prices. This was the result of the introduction of a monopoly price by OPEC countries to conserve their valuable non-renewable energy resources. Prior to this the oil market was a competitive one with the result that the producing countries were receiving little benefit. The formation of a monopoly in the supply of a non-renewable resource results in rising prices and a restricted supply of the product. The monopolist of the distant future will operate with a much larger resource base than would exist if a group of competitive producers depleted their reserves at a relatively rapid rate. This is what led the distinguished economist Robert Solow to comment in 1974: 'The monopolist is the conservationist's friend, although both of them would be surprised to know it.'[5]

The so called danger of imminent resource depletion was criticised by many economists on the ground that historically the increasing scarcity of particular resources has fostered the discovery of alternative resources not only equal but often superior in quality to those replaced. This is simply because every subsequent stage of the need for newer resources requires increasingly higher levels of human capital, technology, organisation and infrastructure. The physical quantity of resources is not known at any time, because resources are only sought and found when they are needed and when societies are ready for them.

The process of a changing energy use pattern is functionally related to two economic factors—population growth and economic, particularly foreign trade, growth. In the nineteenth century, the population growth rate was high and the supply of labour plentiful. Hence labour-using technology and energy sources—wood fuel followed by coal—dominated the relatively small scale production process. This extensive growth process based on a division of labour resulted in more productive utilisation of human and natural resources. Thus with the subsequent rapid growth of captial accumulation and foreign trade, demand for labour exceeded its supply. This led to the intensive growth process based on mechanical power as a substitute for labour. In this process, science-based technology began to emerge. The processing of human resource to human capital was initiated. An increasingly capital and energy intensive technology began to dominate the production process.

Oil, a highly productive and capital intensive energy source, was very cheap until the 1970s whereas labour had become very expensive by then in all labour short economies. Hence increasingly capital and energy intensive technology evolved. But since 1973 the era of abundnance has passed. Energy prices led by oil prices escalated rapidly. At the same time, energy demand moved upward relentlessly because of the rapid growth in technology, diversification of production and consumerism essentially based on the hitherto cheap energy, oil. A 1978 study of New Zealand position noted:

> For thirty years now New Zealand has gorged itself, as have the other developed countries, on cheap energy. Cheap energy, indeed declining real prices for energy, allowed a quarter of a century of rapid economic growth, during which our consumption of total energy doubled about every twenty years, and our consumption of oil and electricity doubled every ten.
>
> Then suddenly at the end of 1973 the party was declared over; the limits of economic growth became very real. These limits are not simple physical limits, but rather complex economic and political ones.[6]

In recent times economic growth has slowed down because of deep recession, the gradual introduction of energy saving technology, energy conservation policy, efficient and economic use of energy and saturation of demand for some consumer durables. There has, as a result, been a fall in energy demand in developed economies. On the other hand, since 1984–5 the OPEC countries have been following a policy of reducing their oil prices. This was expected to stimulate economic activities of both developed and underdeveloped economies. But because the reduction in oil prices has kept the demand for labour depressed, the future looks bleak for the full recovery of these economies. In developed economies, with labour becoming relatively productive and expensive because of rapid technological change, oil is rapidly becoming an inferior energy and therefore a falling energy price would have little effect on demand.

Conventional non-renewable energy resources are becoming scarce. Resource depletion and increasing costs will make exploration of renewable energy sources, such as solar, wind and tidal power, more economic with the help to backstop technology, a technology using resources that are available in abundance.

The rising cost of imported oil after 1973 made it imperative for New Zealand and other developed countries to reduce dependence on imported energy, thus achieving gradual self-sufficiency in energy.

What energy problems are developing countries facing today?

Conventional energy forms have been the basis of industrialisation in the modern industrialised countries. It has been argued that the developing countries will have to take the same road: the same sources of energy will need to be used. This argument ignores the fact that these countries are trying to industrialise with the help of a technology which is a product of a different factor endowment condition.

Most developing countries abandoned coal in favour of the more convenient, versatile and—until 1973–4—cheaper oil. In India, for example, where coal still accounts for two-thirds of primary energy consumption, this restructuring was felt particularly acutely in the energy-intensive sectors. In the early 1970s one of the main customers of coal, the railways, gradually changed from steam to diesel and electrical locomotion. India has a huge army of under-utilised human resources but because of introduced technology requiring human capital these vast human resources could not be productively used. Thus the consumption of coal in industries such as iron and steel, the main industrial consumer, declined during 1970–3 because of the shift to oil. But for India, the most dependable energy form appears to be coal and other forms of secondary energy derived from coal.[8]

With the onset of the world energy crisis, economists wrote that as far as the less developed countries were concerned the oil price increases would considerably aggravate the problems of employment and mass poverty. But it is clear that labour surplus economies will face an increasing unemployment problem and mass poverty on the one hand, and further energy crisis on the other, the more they depend for economic development on this sophisticated source of energy in the present structure of their economies.

Logically energy and labour are substitutes for each other. Economic growth processing of human resources into human capital and changing energy use patterns are functionally related.

This process has been the result of two important economic factors: the rapid growth of industrialisation (which was confined to a handful of Western countries) to cater for a rapidly expanding world market for manufactures—a direct product of the international division of labour in practice since the Industrial Revolution and a declining rate of population growth in industrialised countries as a result of the capitalist process of industrialisation.

These two factors have led to the evolution of more capital and energy intensive processes of production to substitute for labour shortages.[9]

This energy-based technology was intended as a substitute for labour, but this required a shift in the supply of labour from quantity to quality so that the science-based technology could be handled. This, however, had the effect of reducing the fertility rate of the population, causing a further fall in the rate of growth of population. Also to secure competitiveness in the international market all Western economics have been engaged in achieving increasing technological sophistication. The gradual replacement of small scale competitive capitalism by large scale monopolistic competition with its product differentiation approach had made it imperative for these economies to continue to raise the level of energy sophistication with more and more productive human capital.

Various studies of energy need in industrialised countries have shown that the demand for energy in the industrial sector will depend on the role of energy as a factor of production and its substitutability with other factors as well as the substitutability of individual fuels within the energy aggregate.

These aspects of the structure of industrial energy demand are applicable to developed economies where this structure has evolved in the process of industrial growth. But in developing countries the above substitutability factor simply does not exist. Here the production function is determined by the technology and the markets of these products—both are exogenous to these countries.

Income elasticities of energy demand tend to be high for the developing countries, so that attempts towards rapid economic 'growth' in these countries could contribute to large increases in demand for energy.[10]

In developed countries the situation is different in the sense that the energy use pattern has evolved (from animal and human labour using ones to sophisticated capital intensive ones—oil, nuclear, solar, etc.) with economic growth leading to structural changes and changes in factor endowments (cheaper capital and expensive labour conditions); hence the income elasticity of demand for energy can never be as high as that in underdeveloped countries for obvious reasons.

In developed countries, improvements in industrial structures and infrastructures are matters of evolution and thus take the form of marginal changes because of the ever present stimulus of growing international trade, while in underdeveloped countries, the tremendous economic growth in recent times is based on imported sophisticated resources into a poor underdeveloped structure with a completely different factor endowment situation. This brings about spectacular but limited changes in production and income structure, and hence income elasticity is high. Attempts towards industrial and economic growth with imported capital and technology would also mean high income elasticity of demand for energy. This has been evident for the last two decades in cases of underdeveloped countries which have achieved remarkable industrial growth (India, for example),

This prospect raised the dilemma we mentioned earlier, whether developed economies should take resort to more productive sources of energy or more productive utilisation of existing resources particularly human capital (underutilised currently) and therefore relatively labour intensive sources like oil and coal, i.e. to avoid consciously the gap that was created at the time when premature switch to oil from coal was attempted in 1940s and 1950s. It brought about a short-term prosperity but long-term agonies for the world community as a whole.

In sum, with respect to OPEC oil, the backward bending supply curve is more than a theoretical curiosity today. With the reduction in demand for OPEC oil and with the growing need of these countries for western capital technology and consumer goods, the classical cartel attempts to raise or maintain high price with restricted output is becoming impossible. With respect to oil, there is growing evidence that a number of important OPEC producers first determined their domestic investment requirements and then set production goals that will reach their target. With this prospect, if industrialised nations could improve efficiency in the use of oil, world economy could enjoy higher level of growth with fuller employment condition. Instead, evidences are there that leading western economies are giving priority to the development and use of more productive energy sources which will undoubtedly produce higher growth rates but with little employment opportunities.

Productivity effectiveness of energy should be achieved before switching a new energy source. This did not happen in the case of shift from coal to oil i.e. before improvements in energy productivity from coal, technological change favoured use of more sophisticated capital intensive energy source, oil—a cheaper source. This resulted in a rapid change in consumption standard, and life style in the developed world with full employment though for a short while. This energy source is essentially complimentary to capital and substitutes for labour which needed for its utilisation a supply of raw materials—natural and synthetic, sophisticated capital and labour—all of superior quality. Profitable investment of this technology requires market beyond the shores of rich countries (i.e. 30 per cent of world population). Consequently, transfer of technology from these economies to the third world resulted in remarkble growth but with little effective demand for labour in the latter countries for obvious reasons which in turn, acted as a hindrance to the continuation of growth with full employment and without inflation in the developed countries. If, therefore, all developed economies could have attempted to confine these technological changes to improvements in productivity effectiveness of current relatively labour-using energy like coal and oil instead of making their efforts towards technological improvements, more sophisticated superior resources and knowledge intensive energy (—nuclear, backstop fuel) dependent. All developed countries including the Soviet Union are presently attempting to become self-reliant in energy supply by taking steps to develop nuclear and backstop fuels which by definition are extremely knowledge intensive and require minimum labour per unit of output. The problem of such move in a free enterprise system is that it could fail to absorb labour and thus fail to create necessary demand to make these kinds of investment achieve economies of scale of production when confined to domestic market. Transfer of technology at this level of human capital, and energy and knowledge intensity, to the third world will fail to create adequate employment opportunities which in turn will adversely affect demand for labour efforts in the donor countries. These economies have not even crossed the extensive phase of economic growth as indicated by their stagnant sectoral distribution of labour force.

If in the meantime, say two or three decades, time, Third World economies using less sophisticated energy and technology could generate self-sustained growth force and dynamic structural change (i.e. a dynamic process of sectoral labour force distribution), which in turn would create stimulus through demand effects to the developed economy to bring about further technological change. This is more or less an application of models of successful cases of 19th century technology transfer to Western Europe frome the United Kingdom.[11]

NOTES

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AN ECONOMETRIC INVESTIGATION OF VELOCITY OF MONEY IN INDIA

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Against the backdrop of Classical-Keynesian-Monetarist debate, we have attempted to probe into the main determinants of narrow as well as broad velocity of money in India. For this purpose, we have estimated, with the method of Ordinary Least Squares (OLS), a step-wise log-linear regression model for a period spanning from 1966-67 to 1986-87.

The results obtained from the model indicate that the income and stock of money are the highly significant (at 1 per cent level) determinants of velocity of money in India. The price variable is significant at 5 per cent level, only in case of broad velocity of money. Both the short term as well as long term rates of interest are found to be insignificant in explaining the behaviour of velocity of money in India.

The Keynesian-Monetarist controversy over the efficacy of monetary policy, role of money in the aggregate economic activity, neutrality of money and dichotomy of real and monetary sectors, percolates to the 'Stability Vs Instability' issue of the velocity of money. The classicals viewed the velocity of money as a numerical constant, keynesians as an unstable and unpredictable functional variable and the monetarists as a stable but moderately fluctuating function of its determinants. An empirical investigation of the different determinants would enable the monetary authority to predict the behaviour of velocity of money and accordingly devise a suitable monetary policy framework. The present study is an endeavour in this direction. For the purpose of analysis, the study is bifurcated into three sections. Section-I outlines an overview of the theoretical and conceptual framework. Against this backdrop, Section-II delineates the determinants of velocity of money in India and Section-III envelopes the conclusions emanating from the study.

The views expressed in the article are strictly the original views of the author and not of the institution he is associated with.

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SECTION I

VELOCITY OF MONEY—AN OVERVIEW OF THEORETICAL AND CONCEPTUAL FRAMEWORK

The velocity of money has been variously viewed in the theories and models of different vintages.

Classical Approach

The classicals viewed the velocity of money as a numerical constant or an institutional datum. The payment institutions, in classical's view, determine the speed of circulation of money and hence the velocity of money. In addition, they assumed the given level of output by virtue of Say's law and established a direct and equiproportionate relationship between money and prices which is epitomised in the Fisherian equation-of-exchange specified by:

$$MV' = PT \tag{1}$$

In equation (1), M, P, T and V' are respectively the stock of money, index of prices, volume of transactions and the velocity of money.

The 'Income Version' of the 'Cash Transaction' approach to the quantity theory, substituted the volume of transaction (T) by the real value of income (Y) at constant prices and accordingly the transaction velocity (V') by the income velocity of money (V). Consequently, the equation-of-exchange assumes the following form:

$$MV = PY \tag{2}$$

In terms of 'Say's Identity', it can be construed from the tautological equation (2) that the aggregate supply (PY) equates the aggregate demand which is determined not only by the present level of stock of money (M), but also by the velocity of money (V). The velocity of money is the speed of circulation of a unit of money during a stipulated period of time. Technically, it is the quotient of the nominal national income (PY) divided by the stock of money (M):

$$V = PY/M \tag{3}$$

Taking logarithmic transformation of equation (3), we have:

$$\log V = \log P + \log Y - \log M$$

or

$$\log P = \log M + \log V - \log Y \tag{4}$$

Differentiating equation (4) with regard to (w.r.t.) time (t) and rearranging, we have:

$$\frac{1}{P}\frac{\partial P}{\partial t} = \frac{1}{M}\frac{\partial M}{\partial t} \tag{5}$$

At Classical full-employment equilibrium level of output (Y) and with constant velocity (V) of money:

$$\partial\,(\log V)/\partial t = 0,\ \partial\,(\log Y)/\partial t = 0$$

It is amply apparent from equation (5) that the rate of change in prices $\left(\frac{1}{P}\cdot\frac{\partial P}{\partial t}\right)$ is directly proportionate to the rate of change in money supply $\left(\frac{1}{M}\cdot\frac{\partial M}{\partial t}\right)$. The first partial derivative of logarithmically transformed velocity of money equation (4), yields the unitary money-elasticity of prices ($\eta_{P\cdot M}$):

$$\eta_{P\cdot M} = \frac{M}{P}\cdot\frac{\partial P}{\partial M} = 1$$

$$\because \quad \partial(\log V)/\partial M = 0,\ \partial(\log Y)/\partial M = 0$$

The unitary elasticity quotient nomenclatures the classical theory as a 'Theory of Inflation' rather than a 'Theory of Real Income Determination' and restricts the role of money to the monetary sector which is dichotomised from the real sector. Apparently, money, in the Classical framework, is viewed as a "Veil" behind which real forces operate.

Cambridge Approach

The Neo-classical Cambridge 'Asset or Cash Balance' approach took the inverse of the income velocity of money ($k=1/V$) and transformed the quantity theory into a theory of demand for money, without liquidating their fundamental assumptions of constant velocity of money and full-employment equilibrium level of output. The Cambridge demand for money equation is given by:

$$M = kPY \tag{6}$$

The Cambridge School asserted that the desired level of idle inactive cash balances (k) is solely determined by the pattern of transactions (receipts and expenditures of the economic unit) which, at full-employment equilibrium level of output, remains constant. Consequently, the k and V remains constant.

Evidently, except for establishing reciprocal relationship between k and V, the Neo-Classical Cambridge School could not make any fundamental departure from the classical postulates as far as their basic generalisation regarding the "Transmission Mechanism" and the direct and equiproportionate relationship between money and prices is concerned.

Taking the logarithmic transformation of Cambridge demand for money equation (6), we have:

$$\log M = \log k + \log P + \log Y \tag{7}$$

The first derivative of equation (7), w.r.t. time (t) establishes direct and equiproportionate relationship between money and prices:

$$\frac{1}{P}\frac{\partial P}{\partial t}=\frac{1}{M}\frac{\partial M}{\partial t}$$

$$\because \quad \partial(\log k)/\partial t=0,\ \partial(\log Y)/\partial t=0$$

Similarly, the first partial derivative of equation (7) with regard to M, yields unitary money-elasticity of prices ($\eta_{P\cdot M}$):

$$\eta_{P\cdot M}=\frac{M}{P}\frac{\partial P}{\partial M}=1$$

$$\because \quad \partial(\log k)/\partial M=0,\ \partial(\log Y)/\partial M=0$$

Obviously, the Neo-classical Cambridge School deployed different apparatus, but arrived at Classicals' conclusions concerning the relationship between money and prices.

Keynesian Approach

Keynesian paradigm eclipsed the Classical and its variant Neo-classical approach to velocity of money and avowedly viewed the velocity of money as an unstable and unpredictable function of its determinants viz. income and rate of interest. The velocity of money function can be derived from the multiplicative keynesian demand for money (M) function specified by:

$$M=\pi_0 Y^{\alpha} r^{-\beta} U \tag{8}$$

where y and r are respectively the income and rate of interest variables. The exponents α and β are the elasticity parameters and U is the stochastic disturbance term.

Dividing both sides of equation (8) by Y and rearranging, we get the velocity of money (V) function specified by:

$$V=\pi_0^{-1} Y^{(1-\alpha)} r^{\beta} \tag{9}$$

In terms of logarithmic transformation, we have:

$$\log V=-\log \pi_0+(1-\alpha)\log Y+\beta \log r \tag{10}$$

Differentiating equation (10), w.r.t. time (t), we have:

$$\frac{1}{V}\frac{\partial V}{\partial t}=(1-\alpha)\frac{1}{Y}\frac{\partial Y}{\partial t}+\beta\frac{1}{r}\frac{\partial r}{\partial t}$$

In view of the foregoing functional relationship between the growth rate of velocity of money and the growth rates of income and rate of interest, Keynes did not visualise velocity of money as stable in either the short run or long run. In view of this, Keynes contradicted the classicals' equation-of-exchange approach to monetary policy. An unstable velocity of money would break down the link between the stock of money and the level of nominal national income and, thus, scuttle the predictability of money-induced changes in national income. The keynesians, therefore, viewed the monetary policy, though as necessary, but not as sufficient to attain economic stability.

Monetarist Approach

The rise of monetarism is not a complete replication and resurgence of the Classical quantity theory of money as the monetarists, unlike Classicals, did not assume T or Y as given by virtue of Say's Law and the velocity of money as an institutional datum or a numerical constant. Instead, they steered the stress of quantity theory in the direction of keynesian framework and functionally related the velocity of money to various exogenous variables such as income, wealth and different types of interest rates including expected rate of inflation. Consequent upon the variations in these variables, velocity of money may vary both cyclically and secularly. The velocity of money function, in monetarist framework, can be derived from Friedman's—a pioneer monetarist-demand for real money (M/P) function which is homogenous of degree zero in money income and prices and is specified by:

$$\frac{M}{P} = f\left(r_b, r_e, \frac{1}{P}\frac{dP}{dt}, W, Y, U\right) \tag{11}$$

In equation (11), r_b is the rate of interest on bonds, r_e the market yield on equities, $\frac{1}{P}\frac{dP}{dt}$ the percentage rate of change in the price level or the rate of return on nominal money, W the ratio of non-human to human wealth, Y the real income and U the taste parameters.

In terms of multiplicative form and the elasticity parameters, we have:

$$\frac{M}{P} = r_0 r_b^{-\alpha} r_e^{-\beta} \dot{P}^{-\phi} Y^{\psi} W^{\theta} \tag{12}$$

where

$$\dot{P} = \frac{1}{P}\frac{dP}{dt}$$

Dividing both sides of equation (12) by Y and by rearranging, we get the monetarists' velocity of money (V) function specified by:

$$V = \gamma_0^{-1} r_b^{\alpha} r_e^{\beta} \dot{P}^{\phi} Y^{(1-\psi)} W^{-\theta} \tag{13}$$

Taking logarithmic transformation of equation (13), we have:

$$\log V = -\log \gamma_0 + \alpha \log r_b + \beta \log r_e + \phi \log \dot{P}$$
$$+ (1 - \psi) \log Y - \theta \log W \tag{14}$$

Prima facie, it appears from equation (14) that the different exogenous variables in the velocity of money function would cause appreciable variations in the velocity of money. However, despite the introduction of various exogenous variables in the velocity of money function, Friedman assumed velocity of money as almost completely interest-inelastic and, thus, a highly stable function. In the regime of stable velocity of money, the monetary authorities can stimulate desired changes in the level of aggregate demand by adjusting the stock of money to the given velocity of money quotient.

The deductive logic of the monetarists' 'super-structure' is that the velocity of money is neither a numerical constant in extreme classical sense nor an unstable and unpredictable function in full-blown keynesian sense, but a moderately fluctuating function. The fluctuations in velocity are moderate in the sense that the variations in money supply cause variations in income rather than being offset by the variations in velocity of money. The monetary policy is, therefore, viewed as highly effective and hence both necessary and sufficient to attain economic stability.

SECTION II

VELOCITY OF MONEY—AN ESTIMATION OF THE MODEL

To estimate the velocity of money model in India, we have used the concepts of narrow as well as broad velocity of money, based respectively on the definitions of narrow (M_1) and broad (M_3) money supply. The model used is specified by:

$$Y = \alpha + \beta X + U$$

In the model, Y is the vector of the endogenous variable velocity of money and X is the non-singular and non-stochastic data matrix of exogenous variables. α and β are the vectors of unknown parameters and U is the vector of stochastic disturbance terms which account for the influence of all those variables which are not included in the model. It may be mentioned here that the intercept (α) term is expected to be zero, but it is included in the model simply for the convenience of programming.

The method of Ordinary Least Squares (OLS) has been used to estimate the parameters of the model fitted for a period spanning from 1966–67 to 1986–87. The variables used in the model are defined in Appendix I. We have attempted different alternative step-wise log-linear specifications and only the equations with 'good fit' have been reported in the study. The first difference specification of the log-linear models gave somewhat spurious results which were, therefore, dropped.

The expected signs of the first partial derivatives with regard to different exogenous variables are as under:

$$\partial NV/\partial Z_j > 0, \partial NV/\partial NM < 0$$

$$\partial BV/\partial Z_j > 0, \partial BV/\partial BM < 0$$

where Z_j alternatively stands for Y, RS, RL, RS_{t-1}, RL_{t-1} and P.

REGRESSION RESULTS

I. Narrow Velocity of Money

The OLS estimates of the narrow velocity (NV) of money function, indicate that the income (Y) and narrow money (NM) are the highly significant explanatory variables (See Table 1). The regression coefficients of Y and NM, having expected signs, are significantly different from zero at probability levels of 99 per cent. The inclusion of short-term (RS) as well as long term (RL) rates of interest as the additional explanatory variables does not improve the results in terms of $\bar{R}^2$. The regression coefficients of short term (RS) and long term (RL) rates of interest are not significantly different from zero.

The price (P) variable when included in the model as an additional regressor, not only carried itself an unexpected sign but also reversed the expected signs of the regression coefficients of other exogenous variables. Therefore, the equations with P as the additional regressor were spurious and were, therefore, dropped. Similarly, the introduction of lagged rates of interest as the additional exogenous variables also did not give 'good fit'. All such equations were, therefore, dropped from the analysis.

II. Broad Velocity of Money

The results obtained for the broad velocity (BV) of money also indicate that the income and broad money are the highly significant control variables (See Table 2). The regression coefficients of income (Y) and broad money (BM) having expected signs, are highly significant at probability levels of 99 per cent. However, the regression coefficients of the short term (RS) as well as long term (RL) rates of interest are not significantly different from zero.

The inclusion of price (P) as an additional explanatory variable marginally improves the explanatory power of the model (See Table 3). The $\bar{R}^2$ which was 0.96 with Y, BM and the rates of interest as the explanatory variables, increases to 0.98 with the incorporation of price (P) as an additional explanatory variable. The regression coefficients of price (P) variable having expected signs, are significantly different from zero at probability levels of 95 per cent (See Table 3). However, in equation-7 (Table 3), the regression coefficient of price variable is significant at probability level of 90 per cent only. It may, however, be mentioned here that the causation is not unidirectional running from prices (P) to velocity of money and instead it is simultaneous one. To capture the full-flavour of the simultaneous interaction between prices and velocity of money, it requires the building up of a simultaneous equation model.

The substitution of current rates of interest (RS and RL) by the lagged rates of interest (RS_{t-1} and RL_{t-1}) does not improve the results (See equations 5, 6 and 7 in Table 3). The rate of interest variable—current

TABLE 1
ESTIMATED LOG-LINEAR REGRESSION EQUATIONS FOR NARROW VELOCITY (*NV*) OF MONEY IN INDIA
(PERIOD: 1966–67 TO 1986–87)

Equation No.	Regression Equation	Test Statistics				
		$\bar{R}^2$	D.W.	SEE	Mean	RMSE
1	$\log NV = 0.0009 + 0.9989^{*} \log Y - 0.9989^{*} \log NM$ (0.43) (40.66) (16.87)	0.95	2.46	0.0003	0.67	0.0002
2	$\log NV = 0.0012 + 0.9988^{*} \log Y - 0.9989^{*} \log NM + 0.0004 \log RS$ (0.47) (37.25) (21.59) (0.22)	0.95	2.47	0.0003	0.67	0.0002
3	$\log NV = -0.0009 + 0.9999^{*} \log Y - 0.9991^{*} \log NM + 0.0029 \log RL$ (0.33) (39.39) (20.78) (1.16)	0.95	2.52	0.0003	0.67	0.0002
4	$\log NV = -0.0005 + 0.9996^{*} \log Y - 0.9990^{*} \log NM + 0.0007 \log RS + 0.0031 \log RL$ (0.17) (36.05) (25.15) (0.38) (1.16)	0.95	2.62	0.0003	0.67	0.0002

Sources: Computed on the basis of data taken from:

(1) National Accounts Statistics, Central Statistical Organisation (CSO), Government of India.
(2) Chart Bank on Financial and Economic Indicators (1978), Reserve Bank of India (RBI).
(3) Reserve Bank of India (RBI) Bulletin, Various issues, RBI.
(4) Report on Currency and Finance, Various issues, Reserve Bank of India.
(5) Index Numbers of Wholesale Prices in India, Government of India.
(6) Economic Survey, Various issues, Government of India.

Notes: (1) Figures in parenthesis are *t*-values.
(2) *Significant at 1 per cent level of significance.

TABLE 2

ESTIMATED LOG-LINEAR REGRESSION EQUATIONS FOR BROAD VELOCITY (*BV*) OF MONEY IN INDIA

(PERIOD: 1966–67 TO 1986–87)

Equation No.	Regression Equation	Test Statistics				
		$\bar{R}^2$	D.W.	SEE	Mean	RMSE
1	$\log BV = -0.0113 + 1.0060^{*} \log Y - 1.0044^{*} \log BM + 0.0030 \log RS$ (1.49) (26.98) (18.05) (1.05)	0.96	2.29	0.0004	0.40	0.0004
2	$\log BV = -0.0125 + 1.0066^{*} \log Y - 1.0046^{*} \log BM + 0.0013 \log RL$ (1.47) (20.78) (12.38) (0.31)	0.96	2.17	0.0004	0.40	0.0004
3	$\log BV = -0.0105 + 1.0056^{*} \log Y - 1.0042^{*} \log BM + 0.0029 \log RS + 0.0008 \log RL$ (1.20) (19.87) (10.06) (0.99) (0.19)	0.96	2.32	0.0004	0.40	0.0004

Sources: Same as for Table 1.

Notes: (1) Figures in parentheses are *t*-values.
(2) *Significant at 1 per cent level of significance.

TABLE 3

ESTIMATED LOG-LINEAR REGRESSION EQUATIONS FOR BROAD VELOCITY (BV) OF MONEY IN INDIA

(PERIOD: 1966–67 TO 1986–87)

Equation No.	Regression Equation	Test Statistics				
		$\bar{R}^2$	D.W.	SEE	Mean	RMSE
1	$\log BV = 0.0137 + 0.9917^{*} \log Y - 1.0011^{*} \log BM + 0.0139 \log P$ (1.14) (44.12) (39.97) (2.66)	0.98	2.26	0.0004	0.40	0.0003
2	$\log BV = 0.0146 + 0.9912^{*} \log Y - 1.0010^{*} \log BM + 0.0007 \log RS + 0.0146^{\dagger} \log P$ (1.11) (31.37) (25.16) (0.22) (2.29)	0.98	2.38	0.0004	0.40	0.0003
3	$\log BV = 0.0139 + 0.9916^{*} \log Y - 1.0010^{*} \log BM + 0.0003 \log RL + 0.0138^{\dagger} \log P$ (1.10) (37.12) (24.56) (0.09) (2.55)	0.98	2.27	0.0004	0.40	0.0003
4	$\log BV = 0.0149 + 0.9910^{*} \log Y - 1.0009^{*} \log BM + 0.0007 \log RS + 0.0004 \log RL + 0.0146^{\dagger} \log P$ (1.07) (24.39) (19.22) (0.22) (0.10) (2.20)	0.98	2.29	0.0004	0.40	0.0003
5	$\log BV = 0.0130 + 0.9922^{*} \log Y - 1.0012^{*} \log BM + 0.0004 \log RS_{t-1} + 0.0134^{\dagger} \log P$ (0.97) (28.46) (30.43) (0.14) (2.21)	0.98	2.46	0.0004	0.40	0.0003
6	$\log BV = 0.0141 + 0.9915^{*} \log Y - 1.0010^{*} \log BM + 0.0004 \log RL_{t-1} + 0.0139^{\dagger} \log P$ (1.10) (35.29) (22.75) (0.13) (2.58)	0.98	2.37	0.0004	0.40	0.0003
7	$\log BV = 0.0134 + 0.9919^{*} \log Y - 1.0011^{*} \log BM + 0.0003 \log RS_{t-1} + 0.0003 \log RL_{t-1} + 0.0136^{\ddagger} \log P$ (0.87) (11.37) (27.64) (0.08) (0.06) (2.05)	0.98	2.56	0.0004	0.40	0.0003

Sources: Same as for Table 1.

Notes:
(1) Figures in parenthesis are *t*-values.
(2) *Significant at 1 per cent level of significance.
(3) †Significant at 5 per cent level of significance.
(4) ‡Significant at 10 per cent level of significance.

or lagged—is not significantly different from zero. The insignificant role of rate of interest can be attributed, inter alia, to its falling real values and inadequate indexation in the climate of rising prices.

The different test-statistics testify the 'goodness of fit' of all the regression equations reported in the study. The low values of the Root Mean Square Error (RMSE) evince the high predictive power of both narrow as well as broad velocity of money equations. The intercept (α) terms in all the equations, as expected, are not significantly different from zero.

SECTION III

Conclusions

From the foregoing analytical framework, it can be inferred that the income and stock of money (narrow as well as broad) are the highly significant determinants of both narrow as well as broad velocity of money in India. The price variable is significant at probability level of 95 per cent, in explaining the behaviour of only broad velocity of money. In case of narrow velocity of money, the price variable gave somewhat spurious results. The rate of interest—both short term as well as long term—is found to be the insignificant explanatory variable. The role of rate of interest has been observed, by the author (1984), to be insignificant even in explaining the demand for money in India. In the scenario of different 'Impact Multipliers' and the elasticity parameters, the administrative apparatus can simulate the behaviour of velocity of money in India and accordingly devise a suitable policy framework.

APPENDIX I

DEFINITION OF THE VARIABLES USED IN THE MODEL

Notations	*Definitions of the Variables*
NM	Narrow Money supply (M_1) which comprises of currency with the public, demand deposits with banks and other deposits with Reserve Bank of India (RBI) (Rs. crores).
BM	Broad Money supply (M_3) which consists of M_1 plus time deposits with banks (Rs. crores).
Y	National Income i.e. Net National Product at factor cost at current prices (Rs. crores).
NV	Narrow Velocity of money which is the quotient of national income divided by Narrow Money (Y/NM).
BV	Broad Velocity of money which is quotient of National Income divided by Broad Money (Y/BM).
RS	Short-term Rate of interest i.e. treasury bill rate (per cent per annum).
RL	Long term rate of interest i.e. yield on Government of India Securities—Redemption Yield, adjusted to 1970–71 series (per cent per annum).

P	Prices i.e. Index Number of Wholesale Prices; All Commodities (average of months), Base 1970–71 = 100.
RS_{t-1} and RL_{t-1}	One year lagged short term and long term rates of interest, respectively.

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IS INDIA A COUNTRY OF THE POOR? A STUDY OF INTERNATIONAL COMPARISON

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India is a country of paradoxes. Though it is endowed with enviable manpower and rich natural resources the incidence of poverty is very high. The economic scene is repleted with the co-existence of both extremes of prosperity and poverty. Hence it is stated that India is a rich country inhabited by poor people. But this sarcastic comment stands to lose its veracity in the context of India's rapid strides in many facets of economic life, especially after the advent of planning as an instrument of growth. The stock-taking of the past performance reveals the spectacular progress in agriculture, industry, infrastructure and in science and technology. However, the macro-economic indicators show a sense of buoyancy in all these above sectors. But still the percentage of population below the poverty line is not insignificant. It was estimated on the eve of the 5th Five Year Plan that the population below poverty line was 48 per cent; it slumped to 37 per cent and 26 per cent in the beginning of the 6th and the 7th Five Year Plans respectively. The Plans have vowed to banish poverty altogether and to keep the wolf off the doors of many Indians, by the turn of this century.

The existence of penury in the midst of plenty makes one wonder as to what has gone wrong with the mechanics of development? A close watch on the trails of economic achievements, amidst so many bottlenecks, drives home the point that, in macro terms, India has comparably leapt forward. But it is yet to see the fruits of macro economic achievements percolated to the grass-root level individuals in micro terms. It seems that the efficacy of the trickle down theory is not strongly felt in the Indian economy. Hence, an endeavour is made here to compare the standard of living and the economic performance of India with those of some selected developed and developing nations. The aim is to examine whether India is still a poor country in the broad perspective of international economic order. The developed countries like France, Germany (W), Italy, Japan, U.K. and U.S.A. and the developing countries like Brazil, China, Korea, Pakistan, Philippines and Singapore have been chosen to compare with India. The data are related to the year 1983 unless specified otherwise. The parameters used to measure the levels of living are:

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(a) per capita Gross National Product,
(b) per capita daily intake which includes
fats, protein and calories,
(c) per capita annual consumption of sugar,
energy, crude steel and newsprint,
(d) enrolment in primary schools and
(e) population per passenger car, radio
telephone, physician and hospital bed.

1. The Real Per Capita G.N.P.

A cursory glance of the Table 1 helps to infer that the per capita share of an Indian in the G.N.P. cannot go anywhere near those of persons in the developed countries. It is crystal clear that even after three and a half decades of planned economic development an average Indian cannot even dream of a reasonable share from the national income as his counterpart in developed countries. Barring Italy and U.K. all other developed countries ensure their citizens a five figure share from the national income. Even among developing countries India is unable to win an edge over others on this count. Compared with the per capita income of all the given developing economies, India tops the list only in the reverse order. Citizens of China, India's close rival in the population race, and Pakistan enjoy a better economic status and higher level of per capita income, let alone other developing countries. Singapore is the only

TABLE 1

PER CAPITA GROSS NATIONAL PRODUCT (1983)

Countries	Per capita G.N.P. (in U.S. $)
DEVELOPED:	
France	10,500
Germany (W)	11,430
Italy	6,400
Japan	10,120
U.K.	9,200
U.S.A.	14,110
DEVELOPING:	
Brazil	1,800
China	300
Korea	2,010
Pakistan	390
Philippines	760
Singapore	6,620
India	260

developing country which enjoys the privilege of having equated herself with developed countries in terms of per capita income. Singapore is followed by Korea, Brazil, Phillipines, Pakistan, China and India in the ranking.

2. Food Intake

TABLE 2

PER CAPITA DAILY INTAKE

Countries	Fats (Grams)	Protein (Grams)	Calories
DEVELOPED			
France	157	108	3,530
Germany (W)	143	93	3,351
Japan	81	89	2,852
U.K.	143	90	3,243
U.S.A.	168	106	3,641
DEVELOPING			
Brazil	50	59	2,580
China	37	59	2,426
Korea	41	85	3,056
Pakistan	43	56	2,180
Philippines	32	54	2,405
Singapore	47	45	2,255
India	33	50	2,056

Table 2 shows that food and calorie intake by a common man in India is far below his fellow man in a developed economy. In all of the developed countries the consumption of calories is well above the minimum requirement. Only in Japan, the calorie intake is less than in other developed economies. But it enjoys the credit of being ranked with developed countries by virtue of its economic miracles. As regards the protein intake, India lags far behind the countries of developed regions. As far as the fat consumption goes, India can afford her subjects, only one-fifth of what the developed countries like France and U.S.A. can to theirs.

Among the developing countries Korea tops the list of providing large calories which enables her to be on par with developed economies. Similarly in protein consumption also she is first, Even among the developing economies, India cannot register a creditable performance as the consumption of fat, protein and calories intake per person is very poor. India is unable to feed her sons and daugthers with the basic nutritious ingredients. Consequently, malnutrition culminates in Vitamin deficiency—diseases and infant mortality on large scale. The 'protein gap' has to be filled up either by boosting up the pulses production or by import and making it available at cheaper price to reach the common man. The hitherto partly tapped sources, such as dry land agriculture, can be fruitfully exploited to increase the indigenous output of pulses.

3. Consumption of Sugar, Energy, Steel and Newsprints

TABLE 3

PER CAPITA CONSUMPTION OF SUGAR, ENERGY, STEEL AND NEWSPRINT

Countries	Per Capita Annual Consumption (in kgs)			
	Sugar	Energy	Crude steel	Newsprint
DEVELOPED				
France	38.8	3429	373	10.2
Germany (W)	38.8	4156	549	21.5
Japan	23.4	2922	629	24.0
U.K.	38.8	3461	247	23.9
U.S.A.	38.7	7030	508	44.1
DEVELOPING				
Brazil	48.1	745	132	2.4
China	4.1	455	45	1.2
Korea	9.8	1168	286	5.8
Pakistan	8.4	197	8	0.4
Singapore	58.4	4757	712	32.1
India	8.0	182	19	0.4

The above table reveals that India cannot be favourably compared with any of the five developed countries, as the quantity of sugar, energy, steel and newsprint available per person is very insignificant. But the developed countries provide their citizens these things many a time than those of India. So India cannot be studied in relation to these countries.

Of the seven developing nations India secures only the 6th rank in the consumption of sugar, energy steel and newsprint. So far as the newsprint consumption is concerned, Pakistan too shares the 6th rank with India. It is observed that an Indian is not worse-off than his counterpart in Pakistan. But other developing countries make available a better living standard in terms of the chosen parameter.

It is obvious that the living standard of an average Indian is not decent enough to be compared with that of persons in other developing economies. Here also it is seen that Indians are not better-off than their fellow-beings in other countries.

As per the yardstick under discussion, a Japanese consumes less sugar than people in other developed countries. But citizens of almost all the developed countries consume more or less the same amount of sugar. The U.S.A. tops the list in energy consumption, followed by Germany, U.K., France and Japan, respectively. It is remarkable that Japan, which is not endowed with even an iota of basic raw material surpasses all countries in its per capita steel consumption. In this respect Japan is followed by Germany, the U.S.A., France and the U.K. respectively. In the newsprint consumption the U.S.A. outdoes all the countries. Other countries are able to provide more or less the same level of newsprint per head.

Applying the same criterion to the developing region it is found that of the seven countries, Singapore and Brazil alone provide large amount of sugar per person and they are followed by Philippines. But Korea can afford only 9.8 kgs per head which is closely followed by Pakistan, India and China,

As regards the consumption of energy, a Singaporean relegates all other developing countrymen far behind whereas an Indian's share is the least. In respect of crude steel intake, again Singapore proves its mettle by providing maximum quantity per head. On the other hand, Pakistan cuts a sorry figure by making out only 8 kgs per head. The consumption of newsprint is also very high in Singapore whereas it is very low in both Pakistan and India among the developing nations.

4. Primary Schooling

Level of literacy is an important index of the standard of living. Its importance can very easily be identified from the positive correlation between the high literacy level and better living standard in developed economies. By and large, primary schooling is the foremost need to educate the masses and to expose them to the developments in science and technology and their useful applications to the life problems.

From Table 4 it is observed that in providing elementary education to the child population, both developed and developing countries fared almost equally, barring, of course, few exceptions like Pakistan and India.

The coverage of primary schooling in India is not comparable to that of developed countries. Yet it has to make much headway in taking schooling to a large number of children. The developed countries do not vary very much among themselves in this respect. But wide fluctuations are witnessed in the provision of primary schooling between developing coun-

TABLE 4

ENROLMENT IN PRIMARY SCHOOLS AS PERCENTAGE OF CHILDREN IN THE AGE GROUP 6–11 YEARS

Countries	Percentage
DEVELOPED	
France	111
Germany (W)	100
Japan	100
U.K.	102
U.S.A.	100
DEVELOPING	
Brazil	96
China	110
Korea	100
Pakistan	44
Philippines	106
Singapore	108
India	79

tries, the lowest being 44% in Pakistan and the highest being 110% in China. India secures only the sixth rank in the order. Next to China come Singapore, Philippines, Korea and Brazil. As a result, even here, India has failed to come up with other developing countries.

5. Health and Communication Facilities

It is understood from the Table 5 that what are a necessity and a comfort to a person in developed region have become luxuries to an Indian. Hence in India one cannot imagine every second or third Indian to own a car. Here a passenger car serves as many as 704 persons, which is beyond the scope of comparison with developed countries. For instance, in the U.S.A. every second, in France and Germany every third, in the U.K. every fourth and in Japan every fifth owns a car.

Besides car, other services such as radio, telephone, medical care are not available in India as much as in other countries, both developed and developing. Among the developed nations, the U.S.A. secures the first place in providing radio and television services whereas Germany offers the best medical care and facilities in terms of the coverage of population per doctor and per bed.

TABLE 5

POPULATION PER CAR, RADIO, TELEPHONE AND HOSPITAL BED

Countries	Passenger Car	Radio	Tele-phone	Physician	Hospital bed
DEVELOPED					
France	3	1.2	2	580	82
Germany (W)	2	2.6	2	450	85
Japan	5	1.4	2	780	94
U.K.	4	1.0	2	620	119
U.S.A.	1.9	0.5	1.3	520	164
DEVELOPING					
Brazil	16	2.8	16	1700	245
China	4184	16	250	1740	508
Korea	153	2.5	13	1440	636
Pakistan	290	13	250	3480	1567
Philippines	99	23	67	7970	597
Singapore	16	5.0	3	1150	243
India	704	18	250	2690	1254

On the other hand, of all the developing countries, in Singapore and Brazil every 16th citizen owns a car whereas the largest population per car is only in China which is followed by India. Regarding radio service, Korea has the credit of making every second citizen own a radio. Korea is closely followed by Brazil and Singapore. Only in Philippines a single radio receiver serves the largest number.Telephone and distant communication facilities are fairly available in Singapore, Korea and Brazil. In the case of other countries, including India, the coverage of each telephone is as many as 250 persons. Singapore scores the first rank in providing health cure facilities among developing countries. India's place is only last but one. From this analysis, one is convinced that India could not afford a decent living to her citizens. Perhaps, this yardstick enables India to do some self-analysis in the backdrop of global economy and to ascertain where she stands in relation to other countries to cater to the basic needs of her subjects.

Having compared the level of living in India with that in other countries, it is also relevant to analyse how the Indian economy fares and varies from the performances of other countries. The macro-economic variables taken up for study are the growth rates of gross domestic product, per capita G.N.P. and gross domestic investment. Besides, some agricultural, industrial and demographic features are analysed and they are all compared with other nations.

6. Growth Trend

TABLE 6

SELECTED GROWTH INDICATORS (1973–'83)

Countries	Average Annual growth rate in percentage		
	Gross Domestic Product	Per capita G.N.P.	Gross domestic Investment
DEVELOPED			
France	2.5	2.2	0.3
Germany (W)	2.1	2.3	1.9
Japan	4.3	3.3	3.1
U.K.	1.1	1.0	—
U.S.A.	2.3	1.5	1.0
DEVELOPING			
Brazil	4.8	2.8	2.5
China	6.0	4.5	6.6
Korea	7.3	5.6	9.1
Pakistan	5.6	2.9	4.9
Philippines	5.4	2.9	7.3
Singapore	8.2	6.5	9.2
India	4.0	1.8	4.2

The above table reveals that among the developed countries, Japan's efforts to enhance its GDP outruns other countries. While other developed countries have reached a point of saturation, Japan makes a live headway. In this regard India can safely be compared with Japan as its average annual G.D.P. growth rate is 4 per cent. Among the developing countries, Singapore has registered an outstanding growth rate which is closely followed by Korea, China, Pakistan, Philippines, Brazil and India in the descending order. Though India has comparable growth. But there is a finite proof to establish that there is an infinite variation among the developing nations.

The best performers Singapore and Korea have made remarkable progress as a result of consistent indigenous investment during the past one decade. Philippines and China closely followed on the heels of these two countries. Though Pakistan edges a margin over India, Brazil has registered only the lowest growth rate. Even among developing countries India could do better only than Brazil. But other countries definitely do better than India. This indicates that India is yet to strive for enhancing its domestic investment.

7. Output and Yield of Rice

In contrast to the above, the agricultural output of India can well be compared with other countries. Of the total world production of rice, India's contribution is 20 per cent which is less as compared to 18.3 per cent of China. India is second to China not only in population but also in the production of rice. The shares of other countries are only single digit percentages. (See the Table 7).

TABLE 7

CONTRIBUTION OF COUNTRIES TO THE TOTAL WORLD OUTPUT OF RICE

Countries	Output as percentage	Yield per hectare (100 kgs)
China	38.3	50.7
India	20.0	22.7
Indonesia	7.6	37.7
Bangaladesh	4.8	20.5
Thailand	4.1	19.7
Japan	2.9	57.0
U.S.A.	1.0	51.5

The yield per hectare of rice in some developing countries is highly comparable to that in developed countries. The productivity of rice per hectare in China is as much as that in the U.S.A. Both the capitalist U.S.A. and the communist China are alike at least on this count. But Japan, the little economic giant, has the credit of producing largest amount of rice per hectare. On an average an Indian farmer makes up only less than half of the yield by a Chinese farmer. The productivities of India, Thailand and Bangladesh are comparatively low. It is evident that India could contribute $\frac{1}{5}$ of the world rice output not because of its improved productivlty alone, but also because of the large cultivable area under paddy. If India can improve its productivity like China or Japan, it can feed half of the world population, apart from banishing hunger and other attendant evils from India.

8. Output and Yield of Wheat

Turning to wheat output and yield, it is observed from table 8 that both the communist countries, the U.S.S.R. and China, contribute

TABLE 8

WHEAT OUTPUT AND YIELD PER HECTARE

Countries	Percentage to the world output	Yield (in 100 kgs)
U.S.S.R.	16.5	16.1
China	16.3	28.3
U.S.A.	13.3	26.5
India	8.5	18.4
Canada	5.4	19.7
Turkey	3.3	18.6

equal share to the total wheat output. They account for about 1/3 of the world wheat production. India is only the 4th largest contributor to the global output. Its contribution is less only by 5 per cent than the U.S.A.'s.

As regards productivity, China tops the list. The U.S.A. ranks next only to China. Though the U.S.S.R. contributes as much as China does to the total output, its yield per hectare is far less than that of China, the U.S.A. and India. The largest contribution by the U.S.S.R. is possible not merely by an improved productivity but by devoting a large cultivable area for wheat. India has proved its debut by being 5th in the productivity ranking. Its yield rate is just as good as that of Turkey and Canada.

9. Output and Yield of Cotton

The Table 9 shows clearly that China is the single largest producer of cotton lints whereas the U.S.S.R. and the U.S.A. come only second and third. In the production of cotton also India scores only the 4th rank in the world. While productivity in the U.S.S.R. and China is much higher than in the U.S.A. it is very much lower in India than in these countries. Its yield rate is 1/5 of the U.S.S.R. or China. India's productivity in cotton is deplorably low. With the large area under cotton, had India increased its productivity, it would have clothed half of the world population including her own.

TABLE 9

OUTPUT AND YIELD OF COTTON LINT

Countries	Output as percentage	Yield per hectare (in 100 kgs)
China	31.6	7.5
U.S.S.R.	18.8	8.7
U.S.A.	11.4	5.7
India	8.6	1.6
Brazil	3.8	1.9

10. Output and Yield of Groundnut

The Table 10 depicts that India ranks first as the largest producer of groundnut.

TABLE 10

OUTPUT AND YIELD OF GROUNDNUT (IN SHELL)

Countries	Output as percentage	Yield per hectare (in 100 kgs.)
India	36.9	9.7
China	20.4	16.6
U.S.A.	7.5	26.7
Sudan	4.5	9.2
Indonesia	3.8	16.0

India's contribution to the world output is well above 1/3 of the total output. While China's share is about 20.4 per cent, the U.S.A.'s is only 7.5 per cent. The shares of other countries are only meagre. Though India tops the list in total production it fails to keep up the record when it comes to productivity. On the contrary, the U.S.A. has registered a world record of producing 2670 tonnes per hectare which is followed by China with an yield of 1660 tonnes. India lags not only behind the U.S.A. and China but also Indonesia whose share in the world output is hardly 4 per cent.

11. Industrial Growth Rate

The Table 11 shows the compound growth rate of industrial production of the selected countries for a period of 1980–84.

TABLE 11

INDUSTRIAL PRODUCTION

Countries	Annual Growth Rate
U.K.	0.7
U.S.A.	2.9
U.S.S.R.	3.6
Korea Republic	12.1
Pakistan	9.9
Malaysia	9.2
India	6.2

A glance at the table enables one to understand that while the developed countries and power blocks have comparatively registered only a meagre rate of growth, the developing countries have made a big leap in the realm of industrial production. Among the power blocks the U.S.S.R. has fared well. The performance of Korea is remarkably well. It has touched the highest water mark among the nations chosen for comparison. Even Pakistan's industrial growth is enviable. It closely follows on the heels of Korea. Malaysia too registers a creditable performance like Pakistan. All these three developing countries acquit themselves well unlike India whose performance is only the lowest water mark among the developing nations. Though India has done reasonably well on industrial front even when compared with developed countries, she has failed to catch up with her fellow developing nations in boosting her industrial output.

12. Demographic Features

Some vital demographic features of the countries are presented in the following Table 12. The annual compound growth rate of population for a period of one decade, from 1974 to 1984, is given in first column.

TABLE 12

DEMOGRAPHIC TREND

Countries	Annual growth rate (in %)	Birth rate	Death rate
U.K.	0.1	12.9	11.4
U.S.A.	1.0	15.7	8.7
Japan	0.9	12.5	6.2
France	−0.5	13.8	9.8
China	1.4	19.0	7.0
Korea Republic	1.6	23.0	6.0
Pakistan	3.1	42.0	15.0
Singapore	1.2	16.2	5.3
India	2.2	33.2	12.2

From a look at the first column it is self-evident that while the rate of growth of population is less than one per cent in almost all the developed countries, it is very high for the developing nations. A country, like France, is able to achieve negative growth rate in population. The U.K. shows a promising trend of poising for a nil population growth rate. The U.S.A. and Japan register one, and a little less than one per cent growth rate respectively.

Among the developing and developed countries Pakistan tops the list by registering 3.1 per cent growth rate which is followed by India with a growth rate of 2.2 per cent. Even China, the most populous country, is able to contain the addition made every year to the existing level of 1051.55 million population. Similarly Korea and Singapore have also succeeded in bringing down the rate of growth of population. Both birth and death rates for Pakistan and India are very high. Perhaps that is the reason why they have registered the highest growth rate of population. Among the developing countries, the death rate is very low in Singapore. It is followed by Korea and China, respectively. It is because of the best medicare facilities available in Singapore, the incidence of death is very low. But the survival rate is higher in Korea rather than in any other country. The death rate in the U.K. is no better than that in India. While the birth and death rates of all the developed countries are more or less alike, they are dissimilar among the developing countries. Pakistan being at the one end, and Singapore at the other, other developing countries fall in the intermediary range.

Concluding Remarks

The foregoing upshot is an eye opener to those in the fantasy world that India would turn its misfortunes into fortunes. Measuring by all economic standards, India maintains only a low profile, among the countries of the world. Though it is boastful of certain promising trends in the production of some agricultural commodities, productivity is deplorably low, according to the international standard. After independence, India has made progress in absolute terms. But in the relative sense it has to go a long way to catch up with other countries. The standard of living in India is in no way better than that in any other country. The macro-economic parameters may give a rosy picture of the Indian economy. But that is misleading because the standard of living is the best indicater of a country's economic progress. Accordingly India's economic growth is at a snail's pace. On this plank it stands far off from other countries, both developing and developed. Perhaps unabated growth of population may be a cause of such a retarded growth. But it is not the only factor. The inherent inconsistency in the economic structure enables a few to enjoy the fruits of development, depriving teeming millions of basic necessities of life. A concerted effort to improve productivity clubbed with changes in the economic framework, will ensure that all the Indians enjoy the comforts of life like their brethren elsewhere.

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JAPAN :
AT A GLANCE

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TABLE 1
GROWTH OF POPULATION

Year	Population (1000)	Composition of Population (%)			Annual rate of increase (%)	Population density (per km)
		0–14 years	15–64 years	65 years and over		
1872	34806	28.1*	65.2*	6.7*	—	91
1880	36649	31.9	61.7	6.4	0.7	96
1890	39902	32.8	60.8	6.3	0.8	105
1900	43847	33.9	60.7	5.4	1.1	115
1910	49184	36.0	58.8	5.2	1.1	129
1920	55963	36.5	58.3	5.3	1.2	147
1930	64450	36.6	58.7	4.8	1.5	169
1940	73114	36.1†	59.2†	4.7†	1.1	191
1950	84115	35.4	59.6	4.9	3.2	226
1955	90077	33.4	61.2	5.3	1.4	242
1960	94302	30.2	64.1	5.7	0.9	253
1965	99209	25.7	68.0	6.3	1.0	267
1970	104665	24.0	68.9	7.1	1.1	281
1975	111940	24.3	67.7	7.9	1.4	300
1980	117060	23.5	67.3	9.1	0.9	314
1985	121049	21.5	68.2	10.3	0.7	325
1986‡	121672	20.9	68.5	10.6	0.5	326
1987‡	122264	20.2	68.9	10.9	0.5	328

PROJECTIONS OF FUTURE POPULATION

1995	127565	17.55	68.33	14.12	—	338
2005	134247	18.74	63.23	18.02	0.51	355
2015	135938	17.56	59.89	22.54	0.13	360
2025	134642	16.40	60.24	23.37	−0.10	356
2035	133133	17.96	58.80	23.24	−0.11	352

*1870

†Excluding foreigners

‡Provisional estimates

Source: Statistics Bureau, Management and Coordination Agency, Ministry of Health and Welfare.

TABLE 2
VITAL STATISTICS

Year	Births	Deaths	Natural increase	Infant mortality (per 1000 live births)	Expectation of life at birth	
	per 1000 population				Males	Females
1940	29.4	16.5	12.9	90.0	46.92[a]	49.63[a]
1947	34.3	14.6	19.7	76.7	50.06	53.96
1950	28.1	10.9	17.2	60.1	59.57[b]	62.97[b]
1955	19.4	7.8	11.6	39.8	63.60	67.75
1960	17.2	7.6	9.6	30.7	65.32	70.19
1965	18.6	7.1	11.4	18.5	67.74	72.92
1970	18.8	6.9	11.8	13.1	69.31	74.66
1975	17.1	6.3	10.8	10.0	71.73	76.89
1979	14.2	6.0	8.3	7.9	73.46	78.89
1980	13.6	6.2	7.3	7.5	73.35	78.76
1981	13.0	6.1	6.9	7.1	73.79	79.13
1982	12.8	6.0	6.8	6.6	74.22	79.66
1983	12.7	6.2	6.5	6.2	74.20	79.78
1984	12.5	6.2	6.3	6.0	74.54	80.18
1985	11.9	6.3	5.6	5.5	74.78	80.48
1986	11.4	6.2	5.2	5.2	75.23	80.93
1987[c]	11.2	6.2	5.0	4.9	—	—

[a] 1935–36 period [b] 1950–52 period [c] Preliminary figures

Source: Ministry of Health and Welfare.

TABLE 3
INTERNATIONAL COMPARISON OF AGE STRUCTURE OF THE POPULATION

Country	1985				2025			
	Age Structure (%)			Aging index $\frac{(B)}{(A)}\times 100$	Age Structure (%)			Aging index $\frac{(B)}{(A)}\times 100$
	0–14 Years (A)	15–64	65 Years and over (B)		0–14 Years (A)	15–64	65 Years and over (B)	
Switzerland	17.6	68.3	14.0	79.6	15.1	61.0	23.8	157.8
JAPAN	21.5	68.2	10.3	47.9	16.4	60.2	23.4	142.5
Sweden	18.2	64.8	16.9	93.0	15.8	62.0	22.2	140.3
Germany, F.R.	15.4	70.2	14.5	94.2	16.0	61.5	22.5	140.1
Italy	19.4	67.6	13.0	66.9	16.9	63.4	19.6	115.9
France	21.3	66.3	12.4	57.9	17.8	62.9	19.3	108.3
U.K.	19.5	65.4	15.1	77.4	18.5	62.9	18.7	101.1
Canada	21.5	68.1	10.4	48.5	19.2	62.1	18.8	97.9
U.S.A.	21.9	66.4	11.7	53.4	20.2	62.5	17.2	85.1
Australia	23.6	66.3	10.1	42.9	18.9	65.2	15.9	84.1
U.S.S.R.	24.8	65.8	9.3	37.5	22.1	63.1	14.8	67.2
India	36.8	58.9	4.3	11.7	21.3	69.1	9.7	45.5
Brazil	36.4	59.3	4.3	11.8	24.6	66.1	9.3	37.7

Source: Statistics Bureau, Management and Coordination Agency: Ministry of Health and Wefare, United Nations.

TABLE 4
GROSS NATIONAL PRODUCT AND EXPENDITURE•

(Billion Yen)

	1981	1982	1983	1984	1985	1986
Compensation of employees	142967	151215	158469	166890	175371	183150
Operating surplus	65657	65505	69246	72340	77937	80370
Consumption of fixed capital	34810	36702	39090	41239	44238	46823
Indirect taxes	19635	20507	21657	23183	24381	26056
Less: Subsidies	3811	3950	3996	3854	3697	3484
Statistical discrepancy	879	2265	−811	2637	1718	404
Gross domestic product	260136	272244	283654	302435	319947	333319
Private final consumption expenditure	151733	161938	169703	178085	186519	193079
Government final consumption expenditure	26002	26961	28304	29808	31038	32794
Gross domestic fixed capital formation	78956	80101	79561	84237	89038	92344
Increase in stocks	1251	721	408	1494	2092	1005
Exports of goods and services	39104	38941	40372	46202	44498	37394
Less: Imports of goods and services	36910	36418	34693	37391	33237	23297
Gross domestic expenditure	260136	272244	283654	302435	319947	333319
Net factor income from abroad	−467	139	404	581	1212	1333
Gross national product	259669	272383	284058	303016	321158	334652

•Fiscal Year

Source: Economic Planning Agency.

TABLE 5
GROSS NATIONAL EXPENDITURE•

(Billion Yen)

Fiscal year	Gross national expenditure		Private final consumption expenditure	Government final consumption expenditure	Gross domestic fixed capital formation			Increase in stocks	Surplus of the nation on current account
					Private sector				
	Amount	Yearly change (%)			Dwellings	Plant and equipment	Public sector		
1978	221243	5.2	131154	22224	16880	32394	24074	1389	−8872
1979	232878	5.3	140114	23009	16791	35569	23498	2263	−8435
1980	242131	4.0	141398	23756	15114	38293	23154	1823	−1407
1981	250159	3.3	144257	24826	14807	39917	23339	1422	1591
1982	258241	3.2	150360	25172	14980	40698	23369	777	2886
1983	267700	3.7	154910	26052	13641	42712	22860	722	6803
1984	281399	5.1	158910	26732	13703	47631	22191	2069	10162
1985	293904	4.4	163316	27158	14096	53920	20796	2334	12283
1986	301680	2.6	169195	29002	15638	56361	22162	1331	7990

*At c.y. 1980 market prices

Source: Economic Planning Agency.

TABLE 6
ECONOMIC GROWTH RATE BY COUNTRY

Year	Canada	France	Germany, F.R.	Italy	JAPAN	U.K.	U.S.A.
1978	4.6	3.8	3.3	2.7	5.2	3.6	5.3
1979	3.9	3.3	4.0	4.9	5.3	2.1	2.5
1980	1.5	1.0	1.5	3.9	4.3	−2.1	−0.2
1981	3.7	0.5	0.0	1.1	3.7	1.0	1.9
1982	−3.2	1.7	−1.0	0.2	3.1	1.1	−2.5
1983	3.2	0.7	1.9	0.5	3.2	3.6	3.6
1984	6.3	1.4	3.3	3.5	5.1	2.1	6.8
1985	4.3	1.7	2.0	2.7	4.9	3.8	3.0
1986	3.3	2.0	2.5	2.7	2.4	3.0	2.9

Source: Economic Planning Agency, OECD.

TABLE 7
SUPPLY OF PRIMARY ENERGY RESOURCES*

(10 billion kcal)

	1970	1975	1980	1985	1986	Percentage (%)
Total	310468	365719	395015	400653	399821	100.0
Hydropower	19620	21047	22562	21547	21086	5.3
Nuclear	1122	6156	20235	39097	41235	10.3
Coal	64253	60192	67148	79421	76355	19.1
Domestic	25029	12285	12227	10957	10779	2.7
Imported	39224	47907	54921	68464	65576	16.4
Imported Coke	59	38	—	—	—	—
Lignite	71	22	11	—	—	—
Petroleum	219761	267890	259809	221117	220576	55.2
Domestic	847	656	452	630	655	0.2
Imported[a]	218914	267234	259357	220487	219921	55.0
Natural Gas	2676	2663	2333	2315	2168	0.5
Imported LNG	1298	6728	22704	37015	38264	9.6
Charcoal	145	46	24	22	25	0.0
Firewood	1463	937	189	119	112	0.0
Domestic Energy	50973	43812	58033	74687	76060	19.0
Imported Energy	259495	321907	336982	325966	323761	81.0

*Fiscal year

[a] Including petroleum products and LPG

Source: Ministry of International Trade and Industry.

TABLE 8
FOREIGN TRADE

Year	Total value (US $ million) (Customs clearance basis)			Quantum index of foreign trade (1985 = 100)			
				Exports		Imports	
	Exports (f.o.b.)	Imports (c.i.f.)	Balance	General	Machinery and equipment	General	Mineral fuels
1975	55753	57863	−2110	45.3	35.6	72.5	99.7
1980	129807	140528	−10721	70.3	64.6	91.3	106.7
1985	175638	129539	46099	100.0	100.0	100.0	100.0
1986	209151	126408	82743	99.4	99.9	109.5	101.3
1987	229221	149515	79706	99.7	101.0	119.7	105.2

Source: Ministry of Finance.

TABLE 9
FOREIGN TRADE BY COMMODITY GROUP

(US $ million, customs clearance basis)

Year	Total value	Foodstuffs	Raw materials[a]	Mineral fuels	Manufactured goods	Special classification	
						Light industry products	Heavy and chemical industry products
				Exports (f.o.b. value)			
1975	55753	760	874	221	53164	7220	46410
1980	129807	1588	1469	504	124650	15786	109567
1985	175638	1316	1352	539	170673	18940	152368
1986	209151	1476	1505	588	203534	21536	182693
1987	229221	1546	1575	782	222950	22901	200757
				Imports (c.i.f. value)			
1975	57863	8815	11660	25641	11521	3514	8007
1980	140528	14666	23760	69991	30568	8725	21843
1985	129539	15547	18044	55790	36414	9937	26477
1986	126408	19186	17537	36904	44039	13553	30486
1987	149515	22395	22022	39137	60560	20582	39978

[a] Including animal and vegetable oils and fats.

Source: Ministry of Finance.

TABLE 10
FOREIGN TRADE BY COUNTRY AND REGION
(US $ million, custom clearance basis, exports f.o.b. value, imports c.i.f. value)

Region/country	1975		1980		1985		1986		1987	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
TOTAL JAPANESE TRADE	55753	57863	129807	140528	175638	129539	209151	126408	229221	149515
Asia (total)	20428	28345	49368	80214	57026	60292	60708	53479	69569	60313
China	2259	1531	5078	4323	12477	6483	9856	5652	8250	7401
Hong Kong	1378	245	4761	569	6509	767	7161	1073	8872	1561
India	471	658	915	1014	1596	1189	2099	1297	1957	1530
Indonesia	1850	3430	3458	13167	2172	10119	2662	7311	2990	8427
Iran	1854	4978	1530	4101	1348	2506	1144	1383	1043	1556
Iraq	819	396	2169	4339	1306	622	1210	957	391	676
Korea, Rep. of	2248	1308	5368	2996	7097	4092	10475	5292	13229	8075
Kuwait	367	2012	1273	3458	1536	1162	1220	1157	857	1796
Malaysia	566	691	2061	3471	2168	4330	1708	3846	2168	4772
Philippines	1026	1121	1683	1951	937	1243	1088	1221	1415	1353
Saudi Arabia	1351	6135	4856	19538	3890	10245	2762	5205	3239	7311
Singapore	1524	399	3911	1507	3860	1594	4577	1463	6008	3048
Taiwan	1822	812	5146	2293	5025	3386	7852	4691	11346	7128
Thailand	959	724	1917	1119	2030	1027	2030	1391	2953	1796
Europe (total)	10346	5778	25228	12558	28670	14102	41498	20437	49003	25579
Belgium	510	161	1419	372	1477	482	2198	677	2697	859
France	699	501	2021	1296	2083	1324	3152	1855	4014	2871
Germany, F.R.	1661	1139	5756	2501	6938	2928	10477	4298	12833	6150
Greece	337	40	545	36	577	63	563	72	446	69
Italy	334	365	955	938	1117	1050	1723	1495	2103	2135

Netherlands	726	214	2061	380	2071	439	3261	577	4071	757
Norway	523	76	498	186	639	313	1169	257	904	313
Sweden	384	199	793	463	1094	441	1438	575	1931	682
Switzerland	348	417	1158	1076	1161	1758	1887	2571	2266	3101
United Kingdom	1473	810	3782	1954	4723	1817	6647	3573	8400	3057
North America (total)	14697	14929	37983	30616	76064	33051	92297	36204	94771	40003
Canada	1151	2499	2437	4724	4520	4773	5526	4895	5611	6073
Mexico	348	212	1223	934	994	1870	1032	1439	1389	1625
United States	11149	11608	31367	24408	65278	25793	80456	29054	83580	31490
South America (total)	2368	1701	4739	4217	2220	3788	3182	3998	3183	4019
Argentina	363	213	998	287	225	443	361	503	443	300
Brazil	927	883	1115	1561	615	1840	973	1875	879	2032
Africa (total)	5557	2320	8016	4464	4650	3539	4457	3934	5822	4002
Liberia	2585	16	1416	338	647	58	461	97	883	18
Nigeria	585	279	1494	120	342	6	195	5	346	5
South Africa	872	868	1800	1741	1020	1844	1355	2229	1863	2259
Oceania (total)	2295	4788	4473	8451	7006	8765	7005	8353	6860	9597
Australia	1739	4156	3389	6982	5379	7452	5227	6980	5146	7869
New Zealand	393	367	676	828	1072	903	1103	956	1127	1168
U.S.S.R.	1626	1170	2778	1860	2751	1429	3150	1972	2563	2352

Source: Ministry of Finance.

TABLE 11
BALANCE OF PAYMENTS

(US $ million)

Year	Current account balance						Long-term capital[2,3]	Basic balance[3]	Short-term capital[2,3,4]	Errors and omissions	Overall balance
	Total	Trade balance			Invisible trade balance	Transfers					
		Total	Exports	Imports							
1975	−682	5028	54734	49706	−5354	−356	−272	−954	−1138	−584	−2676
1980	−10746	2125	126736	124611	−11343	−1528	2394 (2324)	−8352 (−8422)	3071 (3141)	−3115	−8396
1985	49169	55986	174015	118029	−5165	−1652	−64542	−15373	−936	3991	−12318
1986	85845	92827	205591	112764	−4932	−2050	−131461	−45616	−1609	2458	−44767
1987[1]	86688	96464	224432	127968	−6099	−3677	−137127	−50439	23845	−2951	−29545

[1] Provisional figures.

[2] Minus sign (−) shows outflow of capital (an increase in assets or decrease in liabilities).

[3] Sale of bonds with repurchase rights, included in the long-term capital until 1981, were included in the short-term capital beginning in 1982 (figures for 1980 of this categorisation are shown in parenthses).

[4] Excluding transactions which belong to monetary movements.

Source: The Bank of Japan.

TABLE 12
SCALE OF PUBLIC FINANCE

(Billion Yen)

Year	Revenue				Expenditure			
	General account	Special account	Net total	Government affiliated agencies	General account	Special account	Net total	Government affiliated agencies
1970	8459	18165	16145	6253	8188	16008	13727	5871
1975	21473	39501	39787	12850	20861	33876	33571	12605
1980	44041	96890	86494	20958	43405	83946	72931	20754
1985	53993	126678	105356	13894	53005	111775	90834	13952
1986	56489	148212	—	13802	53640	129789	—	13568
1987[a]	58214	165300	—	5112	58214	152280	—	5175
1988[b]	56700	167301	—	5185	56700	156804	—	5246

[a] Revised budget.
[b] Initial budget.
Source: Ministry of Finance.

TABLE 13
REVENUE OF THE GENERAL ACCOUNT

(Billion Yen)

Fiscal year	Total	Taxes										
		Total	Income tax	Corporation tax	Liquor tax	Customs duties	Stamp duties	Monopoly profits	Government enterprise profits and receipts[3]	Miscella-neous	Public bonds	Surplus during previous fiscal year
1970	8459	7077	2428	2567	614	382	219	274	32	320	347	191
1975	21473	13273	5482	4125	914	373	480	341	34	786	5281	1279
1980	44041	26028	10800	8923	1424	647	841	812	74	1126	14170	989
1985	53993	36786	15435	12020	1932	637	1413	11	186	2587	12308	703
1986	56489	40301	16827	13091	1972	555	1576	13	169	2189	11255	987
1987[1]	58214	41281	18336	13722	2042	599	1806	6	198	2045	10539	2339
1988[2]	56700	43024	17444	13931	2066	619	2066	6	109	2654	8841	0

[1] Revised budget.

[2] Initial budget.

[3] Including receipt from liquidation of the government property.

Source: Ministry of Finance.

TABLE 14
EXPENDITURE OF THE GENERAL ACCOUNT

(Billion Yen)

Fiscal year	Total	Social security	Education and science	National debt	Pension etc.	Local finance	National defence	Public works	Economic cooperation	Small enterprises	Measures for energy	Foodstuff control	Others
1970	8188	1152	965	287	298	1772	591	1441	92	50	—	488	1053
1975	20861	4136	2707	1102	759	3351	1386	3487	168	125	—	915	2726
1980	43405	8170	4606	5492	1653	7829	2250	6896	368	240	424	1030	4448
1985	53005	9902	4883	10181	1868	9690	3179	6891	572	210	601	694	4335
1986	53640	10127	4852	10664	1887	9735	3312	7003	574	221	554	611	4100
1987[1]	58214	10322	5046	11851	1896	11086	3508	7428	661	263	497	688	4292
1988[2]	56700	10384	4858	11512	1880	10906	3700	6082	682	195	462	448	3940

[1] Revised budget.

[2] Initial budget.

Source: Ministry of Finance.

[To be continued in Vol. 5, No. 4 (1986)]

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ARE WE LIVING IN A WORLD WHERE HONESTY DOES NOT PAY?

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A ready-built house priced at Yen 2.1 billion, golf course membership purchased at Yen 500 million and the NTT stock priced at Yen 3 million a share—. What will happen when the swollen Japanese economy collapses?

Part I: Crazy Japanese Economy

Here Comes a New Rich Story One after Another

The following topics may be unpleasant to those salaried workers who are working hard every business day.

First of all, I would like to introduce the case of Mr. Yoshio Shinoyama, 45, who is an employee of a large manufacturing company. Mr. Shinoyama purchased an apartment in front of Osaki Station of Yamate Line for 12 million Yen 12 years ago. Recently he sold this apartment—2 rooms and a dining kitchen (the apartment building has no elevator)—for 56 million Yen and purchased a house in Chiba Prefecture without utilizing any housing loan.

Mr. Tatsuo Itoh, 34, who is working at a TV station, purchased an apartment located in Hatsudai. Shibuya Ward, for 25 million Yen in 1986. Six months later he succeeded in selling this apartment for 50 million Yen, which is twice as much as the price he paid to purchase it.

Frantic rise in land price—everywhere in Japan land price is skyrocketing.

According to Hatsuho Group, a real estate company, prices of apartments in downtown Tokyo had risen twofold every year. Apartments in Chuo Ward and Minato Ward are sold for more than 100 million Yen even if they are ones "built more than 12 years ago and with only 2 rooms and a living kitchen". This is indeed an amazing fact.

And most recently a ready-built house priced at 2.1 billion Yen has been put on sale.

This house was located in Hiroo 2-Chome, Shibuya Ward. It was a 3LDK house with total floor space of about 264 square meters which is build on a 330 square-meter site. More surprising was the fact that as

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many as 50 persons came to the house to make a preliminary inspection of it. Of them, 4 persons were reportedly very eager to purchase it.

It is not only land price that is frantic. The price of golf course membership is also soaring.

It was in February, 1986 that the price of membership of the Koganei Country Club in Tokyo, which is the nation's highest-priced golf course, exceeded the 100 million Yen mark. In November, 1986, only 9 months after that, however, it reached the 200 million Yen mark and in February, 1987, reached the 300 million Yen mark. Some rich person ran a magazine ad offering to purchase it "for 500 million Yen".

It is quite natural for BBC of Great Britain to report on the price of membership of the Koganei Country Club, commenting, "With 300 million Yen it is possible to construct a golf course in Great Britain. Japan is indeed crazy".

Many other golf courses followed suit. We have many instances of the price of golf course membership, which had risen twofold over 5 years, rising two fold in only 6 months. It now takes hundreds of millions of yen to purchase membership of a prestige golf course.

Most recently the price of golf course membership has peaked out and suddenly drifted down. Nevertheless, here comes a new rich story one after another.

Profit of Tens of Thousands of Yen While Making a Yawn

Mr. Shozo Takagi, 43, who is managing an architectural design office in Saitama Prefecture, sold membership of the Kumagaya Country Club, which he had purchased for 2.85 million Yen in 1975, for 26.5 million Yen. He says: "It was priced at about 15 million Yen in the summer, 1986. In the autumn of this year, however, I received direct mails offering to "purchase your golf course membership" from more than 5 companies. And at the beginning of 1987 the competition among these companies intensified. The first direct mail offered the price of 17.5 million Yen. In mid-January another direct mail reached me offering to purchase my golf course membership for 18 million Yen. One week after that I received the third direct mail offering the price of 20 million Yen. Eventually, the price of my golf course membership was raised by 5 million Yen in a matter of a week. Exposed to such a rapid raising of the price of golf course membership, I lost my sense of monetary value and decided to sell my golf course membership in early February. The result was that I made a profit of 23.65 million Yen over a period of 12 years. I decided to sell it because I thought I would be forced to continue to worry about its price until I sell it. I intend to build a new house with the money".

Mr. Kazuo Katoh, 58, who is operating a service station in Yokohama, sold his membership of the Rainbow Country Club, which he had purchased for 9.35 million Yen in the autumn of 1982, for 48 million Yen in mid February, 1987 making a profit of 38.65 million Yen.

"I intend to purchase stocks of NTT with this money. I still regret that I did not purchase them when NTT first put its stocks on sale. I intend to purchase 5 to 6 shares of the company the next time the company sells its shares. I am quite certain that the NTT stocks will also bring me profit".

The stock price was also skyrocketing. Stock exchanges in Japan ave been booming with the Nikkei. Average Index renewing its new high one after another, although a shaking blow of 'Black Monday' hitted heavily the world economy in October 1987. The "Land Ownership Standard System" in Japan, however, is still going strong.

According to a survey made public by the Nihon Keizai Shimbun (Nikkei), Kokune Construction scored a 170.8% return on investment, Ishihara Construction a 158.0% return on investment and Gajoen a 113.3% return on investment, all in only a month. This means that a person holding stocks of these companies more than doubled the value of his or her assets in only a month.

How about the yearly return on investment for major companies? More than 100 companies had recorded a yearly return on investment of far more than 100%, with Maruishi Bicycle scoring a 567% yearly return on investment and Marukin Bicycle a 535.8% return on investment. This evidences the fact that stock investment is a very profitable investment.

The NTT stock, among others, is a blockbuster. In no more than a month after it was listed its price rose as much as 2.5 times, exceeding the 3 million Yen mark at one time. Its total current value approached the 50 million Yen mark. It is reported that more than a half of the 1.6 million NTT stockolders were those who purchased stocks for the first time. This also implies that there are so many people in Japan who want to make easy money.

Mr. Tadashi Fujikura, who is working at an advertising agency, says, "My wife and I purchased a share of the NTT stock each. And the NTT stock now brings us a profit of tens of thousands of yen each time we make a yawn. I am now in the midst of discussing a plan to make effective use of the profits with my wife—whether to make an overseas trip or to purchase a foreign-made car".

These episodes are only the tip of the iceberg. It appears as if the entire Japanese archipelago were being affected by a "casino syndrome".

A Backlash Is Foreseen

According to the wage survey made public in July, 1986, by the Japan Productivity Center, the total amount of money a college-educated salaried person earns until he or she retires was 229 million Yen and that a high school-educated salaried persons until he or she retires was 210.62 million Yen. These total amounts translate into about 6 million Yen annual income.

Many of these salaried people may well think they are living in a world where honesty does not pay if they hear of a person who made 2 million Yen in only a month by trading the NTT stock or of people who earned tens of millions of Yen by selling golf course membership or an apartment.

But this is quite an abnormal economy, which cannot last long. Just like a foam candy, such a swollen economy is certain to get deflated if pricked with a needle.

Mr. Jiro Yasuda, stock trading commentator, warns about the NTT stock, "You simply own a piece of paper which you can sell for 2.7 million Yen now. If you can sell it for 3 million Yen, it does not mean that anyone else who owns the same piece of paper can sell it for 3 million Yen. Therefore, its current price of 2.7 million Yen is nothing but a bubble. It can be liked to the finale of a drama. Everyone is excited, but soberness lies ahead."

In short, an imaginary price tag is put on the assumption that the mutual depending stockholders don't sell his or their companies' shares. A castle in the air may collapse at any time.

Of cource, the same is true of the case of golf course membership. If they continue to pursue such an illusion, they will undoubtedly be confronted with a backlash in the not so distant future.

I will detail later the reason why I think so. Here I would like to explain the background for these phonomena.

The "casino syndrome" originates, in the yen's sharp appreciation against the dollar, the huge trade surplus and the resultant huge money surplus. Many corporations are interested in stock and land speculation, away from capital investment which is not likely to produce quick return on investment. Individuals are also dabbling in speculation with their money drawn from bank accounts, in an era of abolition of the tax-free small-sum savings system, reduction of the official bank rate and the very low interest rates. Indeed both corporations and individuals have been playing with their surplus funds in the midst of a "zaiteku" boom.

This is evidenced, for instance, by the fact that the increase in the amount of money (the Bank of Japan notes) was three times that in 1986. According to the preliminary figures released by the Bank of Japan, as of the end of February 1987, the total issue of the BOJ notes was 23.907 trillion Yen, an 11.2% increase over the corresponding month a year ago. The monthly increase in the amount of money for the month was 941 billion Yen, which was an all-time high and as much as 3 times that in the corresponding month a year ago.

Generally, the amount of money issued decreases in February. Why did it increase in February 1987? Why did it score a two-digit rate of increase (for the first time in 7 years since March 1980, a period immediately after the second oil shock, when an increase rate of 10.9% was recorded)?

That was because many corporate investors and individual investors began to actively invest in stocks drawing bank deposits or borrowing money from banks in anticipation of the fifth reduction of the official bank rate (to 2.5%), which was enforced in February 23,1987.

As a consequence, the Tokyo Stock Exchange generated an unprecedented stock fever in February—a daily turnover of 1 trillion Yen on the average.

A result of these crazy operations was 'Black Monday Crash' in the worldwide scale.

Strong Yen-Induced Recession Combining with Structural Recession

However, close analysis of each factor of the background of this money surplus phenomenon reveals that all this is working on a very fragile base and that a serious danger lies ahead.

To put it more expressly, a financial panic well be in the offing.

I foresee that a financial panic will certainly occur around 1990. In my judgment, there are 4 factors that will trigger one.

The first factor is a socio-economic shock that results from a marked increase in unemployment and a general feeling of unrest. Let me explain this in more detail.

This factor involves the standstill of the U.S. economy, which has been suffering from "triplets deficits"—fiscal deficits, trade deficits and household deficits. The U.S. economy has been plagued by accumulation of deficits in current account balance of payments.

In 1986 the U.S. trade deficits amounted to $150 billion, of which about $55 billion was trade deficits with Japan. What is worse, the U.S. deficits with Japan for 1986 scored an increase of 26% over the previous year. This implies that even if the U.S. deficits with Japan decrease,the U.S. aggregated deficits would be steadily increasing.

Also this means that Japan's trade surplus aggregated with the U.S. is on the increase. The problem with Japan is how to return its huge trade surplus to the rest of the world, particularly to the United States.

What Japan is currently doing is to cope with this situation? It is doing nothing more than purchasing the U.S. Treasury Bonds and the U.S. securities, starting to manufacture automobiles and home electrical appliances in the United States and going round shopping for real estate in New York, Los Angeles and other big cities.

At a time when the Unites States was called a "surplus power", the country spent heavily overseas, as in the case of the "Marshall Plan" designed to recover the European economy. In contrast, Japan, a "new surplus power", is only interested in feathering its own nest, far from making "international contributions". This is just what the rest of the world is thinking of Japan.

Under such circumstances, the yen's value is destined to rise more and more. Perhaps the yen's value against the dollar will continue to rise until one dollar becomes equivalent to 120 Yen. If Japan's trade surplus with the United States continues to increase, there might be a situation where one dollar is equivalent to 100 Yen.

It is quite natural that the stronger Yen will badly affect Japan's secondary industry, particularly its manufacturing industry, which in turn will cause a strong yen-induced recession and a marked increase in unemployment.

Furthermore, the strong yen-induced recession will be accompanied by a structural recession. The current structural recession is called a big "Kondratieff wave". The Kondratieff cycle is a cycle of 50 to 60 years and currently the world economy is in the stage of the 4th downturn of the wave.

The current downturn of the wave means a switch from heavy and chemical industries which consume too many resources to high-tech industries such as automobile, home electrical appliance and computer industries. However, even these high-tech industries are still not able to stem the downturn of the wave, although they have been contributing to the softnomization and the increased efficiency of the world economy to some extent.

Land Worship Being Shaken by Increased Unemployment

Furthermore, if a new oppressive factor called "Consumer's Tax" is added to this, the unemployment rate which is currently 3%—1.82 million wholly unemployed persons (5% by Western definition of wholly unemployed)—will begin to increase at a higher pace. In my calculation, it will reach 8% or 5 million wholly unemployed persons (10% in Western terms).

The past pattern has been that unemployment in the manufacturing industry has been absorbed by the distribution and service industries.

If a new consumer's tax is imposed on each stage of sales, its effects will be directly felt by consumers, which in turn will lead to an increase in unemployment called rationalization. The jobless people as a result of this rationalization can no longer find jobs anywhere.

An increase in unemployment will quite naturally cause a social unrest, which will be intensified by the government's provocative actions to demonstrations and riots. The "Land Ownership=Standard System" is the most vulnerable to such a social unrest or disturbance. Unlike gold, land cannot be carried with one when one tries to run away. It is an asset which presupposes public order.

If a social disturbance occurs, even registry offices will be raided. Consequently, the land standard system which underlies high land prices, the basic factor of the current crazy Japanese economy, will be shaken heavily.

Banks willingly lend money on land under the influence of "land worship" which is based on the concept that land prices will never decline. The "land worship" is never only an invention by land brokers who are intent on boosting land prices. Banks and even government agencies are involved. As a result, both institutional and individual investors have been dabbling in land speculation. However, the land standard system which is a "black hole" absorbing all the money in Japan, will be shaken in the process of a larger change by the blows of increase in unemployment and the resultant social unrest. As a result, land prices will begin to decline.

Land prices are so high in Japan not only because Japan has a very small land area but also because Japanese society is a very stabilized one. But the very base of the stable Japanese society is gradually going to be shaken by a possible increase in unemployment and the resultant social unrest where a crowd of unemployed businessmen, workers etc. will surround the Diet Building in protest against the lawmakers' inability to cope with the situation.

Part II: A Financial Confusion the Same as in 1929 Foreseen

The second factor is a shock to result from the government's tight money policy designed to prevent inflation.

As mentioned earlier, the amount of issue of the Bank of Japan notes is ever on the increase. If the volume of a currency in circulation increases remarkably, there will be a general inflation. Japanese economy is already in the state of stock inflation. When it will change into a general inflation is only a matter of time, because money surplus arisen by black figures of foreign revenues will be changed by public finance inflation, and domestic prices will be straightly raised by import rush and higher prices in accordance with Yen-cheaper.

Since it is impossible to further reduce the official bank rate to contain inflation, the financial authorities have no choice but to implement tight money measures including raising of interest rates.

If a concern over inflation continues, the government will be forced to implement tight money measures as mentioned above, which will in turn bring about a sharp decline in stock prices.

The third factor is a shock to result from the Japanese institutional investors' move to withdraw their funds invested in the United States to offset the decrease in accordance with Dollar-cheaper in the value of their funds in Japan.

Many institutional investors in Japan engage in hedging while buying U.S. Treasury Bonds. As part of their hedging they sell the dollar, which is contributing to the yen's steep appreciation against the dollar. Thus far they have managed to make profits by a combination of exchange dealing, speculation and hedging.

They may continue such deals profitably so long as the level of the weak dollar remains at the level of 1 dollar being equivalent to 130 Yen. As mentioned earlier, the yen's value against the dollar may be appreciated to the point where 1 dollar is equivalent to 120 Yen or even 100 Yen. Should such a situation occur, the value of their assets denominated in dollar will be reduced by as much as 1/3 even if they think they are making profits. And then Japanese estate-investments in U.S.A. on the basis of 'conviction of permanent rise of land price' will be greatly blowed by a larger downfall of land price.

They are still not aware of the possibility of such a situation occurring. But it is certain that they will, in due time, become aware of the fact that this reduction in the value of their assets is a matter of grave concern to them. It is crystal-clear that such a situation will give great shock to these institutional investors.

What will result from such a situation? First of all, they will be forced to sell U.S. Treasury Bonds and withdraw their funds invested in the United States. Their deepseated grudge against the U.S. government's protectionist measures which have dealt Japan's business and industry with 'Japan bashings', and severe guidances, will combine with their anti-U.S. sentiment to trigger their concerted withdrawal of funds from the United States. This will cause a steep decline in bond prices in the United States, which in turn will trigger a sharp decline in stock prices in the United States, and then a great panic may occur.

The Great Depression was triggered by a sudden decline in stock prices on October 24, 1929 and during the subsequent 3 months stock prices slumped by as much as 48%. It is very likely that a similar financial panic will occur if Japanese institutional investors continue babbling in the money game.

Banks and Trading Companies May Go Bankrupt One after Another

The worst is yet to come. A sudden sharp decline in stock prices will be accompanied by a steep reduction of the value of many goods, which will entail an extreme decline in exports from Japan to overseas. Of course, this will cause a marked decrease in developing nations' exports to Japan, which in turn forces many cumulative debt-ridden countries to give up. What will lie ahead of such a situation is nothing but a global financial panic.

The fourth factor is perhaps a shock of cumulative credit. The total cumulative debt of such debtor nations as Brazil, Argentina, Chile and Mexico has reached the $1.1 trillion mark and tends to increase more and more.

The most serious of the problems confronting the creditors to these

Latin American debtor nations is the possibility of the debtor nations' "together with" concerted "moratorium". Should a situation occur where these debtor nations are no longer able to even pay interests on loans to them, the world's financial community will get into a panic. In the United States where the largest number of banks since the Great Depression of 1929 have gone bankrupt, even big banks will go bankrupt one after another. Many Japanese banks which are guaranteed by U.S. banks will no longer be able to regard such a situation as having nothing to do with them.

According to my tentative calculation, the total cumulative debt of the world's debtor nations will reach the $1.3 trillion in 1989. Japanese private enterprises account for nearly 20% of the total cumulative credit of the creditor nations. If it is assumed that they will account for 25% of the total cumulative credit in 1989, as much as $325 billion or 39 trillion Yen (calculated on the basis of 1 dollar=120 Yen) will have been lent to debtor nations by Japanese corporations.

Should it happen that the total amount of 39 trillion Yen becomes unredeemable, almost all Japanese financial institutions, including such institutional investors as life insurance companies, nonlife insurance companies and trading companies, will perhaps throw up their hands in dismay. They will all get into a terrible panic. Banks and trading companies may go bankrupt one after another. However, the special emergent finances are promptly put into operation by Japan Bank and Government, and then a fierce hyper-inflation will have arisen.

Another noteworthy factor is a forecast that the United States will be the world's largest debtor nation with a cumulative debt of $1 trillion by 1990, overshadowing the crititical cumulative debt held by Latin American nations. If this forecast proves to be right, the oil dollar in the amount of more than $2 trillion will flow out of the United States.

If things are left as they are, the United States would be certain to suffer from a heavy burden of tremendous debt in a few years, even if the major creditor nations don't run away from the country. It would be impossible for the United States to repay that huge amount of debt. The country would have no choice but to create an inflation through an overissue of Dollar paper and thereby alleviate its status as a debtor nation.

As mentioned earlier, it is the Japanese who are intent on buying the U.S. Treasury bonds, etc. Even after the G5 meeting, Japan's appraisal loss from investment in the U.S. securities amounts to 13 trillion Yen. The U.S. Treasury bonds, etc. stocked by Japanese institutional investors are very likely to be no better than waste paper.

A Terrible High Power Inflation

I have explained about the 4 factors which I think may trigger a serious financial panic. Which one of them is most likely to trigger such a financial panic? In my opinion, two or three of them, rather than one of them, will perhaps place us in such a financial panic.

On the other hand, the worst is yet to come as long as the current crazy "money game" is concerned. It may be that eventually the money game will disintegrate like a great edifice collapsing on the ground, causing the Japanese people to groan under a helpless poverty. A financial panic will nullify both credit and debt. The haves will be forced to start from scratch again.

After that a terrible high power inflation will hit Japan.

As regards Japan's tremendous 39-trillion Yen cumulative credit which I referred to earlier, for one instance, the following calculation can be possible, if such a financial panic is to occur in 1989.

If the Japanese economy continues the current trend, Japan's GNP will amount to 370 trillion Yen in 1989. How will the loss of the 39-trillion Yen credit affect the GNP of 370 trillion Yen? If we calculate on the basis of Keynes' multiplier, the multiplier for Japan with a 20% savings rate is 5 since the multiplier is the reciprocal of the savings rate.

In other words, the loss of the 39-trillion Yen credit is equivalent to 39 trillion Yen multiplied by 5 $\doteqdot$ 200 trillion Yen. And Japan's GNP of 370 trillion Yen is to be affected by the loss of 200 trillion Yen. The Japanese Government and the Bank of Japan will not be allowed to overlook this urgent situation. As a natural result, the Bank of Japan will have to take out paper money from its basement and lend it to banks and trading corporations in the form of emergency loans. But the money is without any guarantee. Moreover, the banks and trading corporations will repay their debt with the money, for they cannot afford to do nothing with the money.

As a result, the money in the amount of 200 trillion Yen will be up and around, which is certain to trigger a terrible inflation. The action of as much as 54% of the GNP for the year throw the entire Japanese economy into confusion.

A Helpless, Dark Path Lies Ahead

The Japanese economy has thus far been successful because it has been supported by hidden assets under the "land and stocks ownership=standard system" as the capital base. Land as hidden assets is valued at 1,680 trillion Yen for the 30-year period after 1955. It breaks down into 900 trillion Yen (Land owned by large corporations and landowners) and 780 trillion Yen (land owned by small- and medium-sized corporations and individuals).

The same is true of stocks. Japan currently has hidden assets in the amount of 330 trillion Yen called stocks. The total amount breaks down into 120 trillion Yen (stocks held by financial institutions), 80 trillion Yen (stocks held by individual stockholders) and 130 trillion Yen (stocks held by corporations).

It has been advocated by me that Japan should try to change with orderliness its industrial structure while it keeps these huge hidden assets, but partial eating up of hidden assets is arbitrarily proceeding.

Another reason why the Japanese economy has so far been successful has been 'Japan Inc.'s combination predominance' over corporate America. The Japanese steel industry has survived by winning competition with its U.S. counterpart. The Japanese automobile industry has survived by outpacing Detroit. The Japanese agricultural industry, which had little chance of surviving international competition, had no choice but to be overprotected by the government.

However, what will happen to our daily lives if the collapse of the Japanese economy is triggered by the above-mentioned 4 factors?

It will at least nullify Japan's and the United States' credit and debt and the crazy "money game" will also disappear.

It goes without saying that the value of stocks and golf course membership which are directly related to actual value is certain to fall to the lowest level. What will happen to the value of land is the question. It will no longer maintain its current value if only a depression or a sharp decline in land prices occurs in the process of the collapse of the land standard system. If a high power inflation occurs, however, it may manage to maintain its current value.

What is crystal-clear is that a time will soon come when both the haves and the have-nots will lose all that they have had. There lies a helpless, dark path ahead. But it may be that we all have only ourselves to blame.

"Zaiteku (money games) from Now" Is the Worst Thing

It is said that in Scandinavia a large crowd of rats plunge into the sea only to die once every several years. I hear that this is a phenomenon for reducing an excessively expanded rat population. Just like this, Japan is now dashing on a dark path into the sea.

We are going to be dragged forcibly into a large crowd of rats heading for the sea. If we are rats which have made a small fortune, we cannot resist the terrible rapid flow of the crowd running toward a catastrophe once we were in it. Only those which are fortunate enought to crawl up to the shore can survive.

If someone, blinded by the crazy prices of land, stocks, golf course membership, etc., think, "I should try 'zaiteku' from now", he or she must prepare for the worst.

Such speculation has already reached the peak. Now "dangerous indications"—a structural recession, a strong yen-induced recession and a consumers' tax recession—are clearly visible.

Those who can afford to purchase gold which is free from the effects of inflation or a ready-built house priced at 2.1 billion Yen, had better purchase a small lot of land in the country and live on it as part of the steps to prepare for the worst.

It is big cities that are likely to be damaged most by a financial panic. When a high power inflation comes, it may be those people who move to the countryside which is less likely to be affected by the panic and live there for 2 or 3 years until the storm is over that can survive it.

In any event, I believe a time will come when the entire Japanese economy collapses. Like a ball rolling down a steep slope, the Japanese economy is aproaching a catastrophe at full speed. A high mountain makes a deep valley.

If we are to evade such a catastrophe, we must get out of the 'kingdom of well-fed and well-clad fools'. We must switch from the principle of profit-oriented 'rationalization and efficiency' to the principle of life innovation through self–sufficiency. At least part of the trade surplus must be returned to our trading partners and a helping hand must be stretched out to developing countries which are in difficulties. After that, we may find a way to overcome our own predicament.

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RATIONAL EXPECTATIONS REVOLUTION

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By far one of the most challenging recent developments in theoretical and empirical economics is the rational expectations macroeconomics (REM) or the new classical macro-economics, found in high concentrations at the universities of Chicago and Minnesota. Though much has been written on the concept of rational expectations and it had been introduced as early as 1961 by Muth,[1] yet it was only a decade later that rational expectations were systematically incorporated into inflation models. The dominant figures in this school are Robert Lucas of Chicago, Thomas Sargent and Neil Wallace of Minnesota and Robert Barro of Rochester.

The essential innovation of modern versions of monetary theory and policy is the attempt to absorb the expectations of individual economic agents explicitly in any model devised.[2]

The rational-expectations school believes that there is no slope in the short-run phillips curve on which the policy maker can get a toehold. Any systematic attempt to stabilise the economy is self-defeating; it tries to expand the economy, but only succeeds in raising inflation. Believers in this new approach think that understanding the phenomena of the 1970s and 1980s requires a completely different approach to macroeconomics from that of Keynes and his followers.

Rational expectations macroeconomics has a view of the economy that resembles that of the classical economists. It holds that (1) people make the best possible use of their limited information and that (2) prices and wages are flexible. These two points are the essence of the rational expectations revolution.[3]

To say that (1) people make rational choices means that people's decisions are made on the basis of the best available information. Their expectations are formed using the latest available data and the best available economic

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[1] J. F. Muth: Rational expectations and the theory of price movements, *Econometrica*, 29 (July 1961), 315–335.

[2] John J. Struthers: Rational expectations: A promising research progamme or a case of monetarist fundamentalism?, *Journal of Economic Issues* XVIII (4) (Dec. 1984), 1134.

[3] Paul A. Samuelson and William D. Nordhaus: *Economics*, 12th Edn., 1985, p. 335.

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theory. Such a postulate will assure us that the Government cannot "fool" the people, for people have access to the same information as the state. People have rational expectations when their forecasts are unbiased and they use all available information. A forecast is "unbiased" if it contains no systematic forecasting errors. Clearly a forecast cannot always be accurate—you cannot foresee how a coin flip will come up on a single toss. By predicting that 50 per cent of tosses come up tails would be an unbiased forecast.[4]

But the rational-expectations hypothesis goes even further. It postulates that people use all available information and economic theory. It is assumed that people understand any systematic policy rules or strategies employed by the Government. Thus an important corollary of the rational expectations hypothesis is that people quickly learn about policy makers' behaviour. So you can't fool any of the people once policy makers have adopted systematic or predictable policies.

(2) The second central assumption is that prices and wages are sufficiently flexible to ensure that demand and supply are equal in all markets. Thus, this new theory holds that for every input and output—apples, oranges, calculators, students, professors—the price or wage moves quickly to equilibrate supply and demand.[5]

The rational expectations theorists assume that prices move quickly enough, so that markets are always in equilibrium. The price and quantity are always on both the supply and demand curves every minute of every day of every year. In other words, prices are flexible, and all markets clear at all times.

The assumption of flexible prices and wages is the key to the conclusions of the rational expectations school. Many economists have questioned its realism. Why don't the prices of airline tickets float up and down to auction off the available seats? Why do auto dealers make people wait for popular car models, rather than simply raising their prices to clear supply and demand? Many mainstream (or post-Keynesian) economists think that these questions are still unanswered by the new school.

The rational expectations approach can be applied to many places. But for macroeconomics, the most important application comes in labour markets. The central economic questions concerning labour markets revolve around the nature of unemployment. Are people involuntarily unemployed—willing and able to work at going wages, but unable to find jobs? Or are they voluntarily unemployed—electing not to work even though jobs are available?

Rational expectations macroeconomics holds that prices and wages are sufficiently flexible, so as to ensure continuous clearing of all markets, including the labour market. This implies that almost all unemployment

[4] *Ibid.*, p. 335.

[5] *Ibid.*, p. 336.

is voluntary. People are unemployed because real wages are too low to induce them to work.

Rational expectations macroeconomics looks to people's misperceptions as the key to business cycles. That is, high unemployment arises because workers are confused about economic conditions, quitting their jobs to look for better ones and thereby swelling the reserve army of the unemployed.

According to the rational expectations theory of unemployment and inflation, the downward-sloping "apparent short run Phillips Curve" arises as a result of misperceptions about real wages or of relative prices.

The rational expectations macroeconomics says that the short run Phillips curve is vertical when the policy is anticipated. This theory states that, while we may observe a downward-sloping short run Phillips curve, we cannot exploit the slope for the purposes of stabilizing the economy. If economic policy relies on a systematic policy to drive unemployment down below the natural rate, economic agents will soon come to understand and to anticipate the policy. Once such a policy is anticipated, prices and wages will adjust in advance. People will remain on their supply and demand curves, and unemployment will stay at the natural rate.

Criticisms of Rational Expectations Hypothesis

The rational expectations macroeconomics is criticised on the following grounds:

One line of criticism is that although individuals do have rational expectations in the sense that their expectations make the most efficient use of all the information known to them, the information known to the Government differs from that known to the individuals of the private sector. The likelihood of there being such differential information is open to dispute. It is arguable that as an empirical matter, the availability of economic information and analytical techniques is so great that differential information is implausible. The agents, such as corporations and unions, that have the greatest effect on prices and wages, have the same information about the economy as does the Government and are able to predict the Government's own reaction to the information—that is why they employ economists and econometricians. It has also been asserted that on theoretical grounds, such a situation is bound to arise, since the costs of wrongly predicting Government policy and the rate of inflation are so great that there is a considerable return on investing in information.[6]

A second line of criticism is that even if all information is shared equally, there is no reason to think that individuals do have rational expectations. They may form their expectations in the manner predicted by the adaptive expectations (error-adjustment) model. Why should one model of expectations be preferred, in principle, to another?[7]

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[6] Laurence Harris: *Monetary Theory*, 1985, p. 459.

A third criticism made by Modigliani (1977)[8], is that since the rational expectations hypothesis implies that even temporary deviations from the natural rate of unemployment are impossible (except as random deviations), the theory finds it impossible to explain such major depression as occurred in the 1930s. The existence of the Great Depression is, according to this argument, a crude but strong empirical demonstration that the rational expectations hypothesis is wrong. The monetarist response put forward by Sargent[9] (1976) is that the experience of the 1930s can be explained by a rise in the natural rate of unemployment rather than by deviations from it. This view is complemented by that of Darby[10] (1976) that, in any case, the usually accepted figures for unemployment in the late 1930s are higher than the true figures.

A fourth criticism is that rational expectations seem to allude to a set of expectations that are somehow in "equilibrium", even when equilibrium may not exist in the economy as a whole, and indeed may be both unachievable and undesirable.

A fifth criticism is whether this is really to assume too much—is this not tantamount to the view that uncertainty is no longer a problem for decision makers? Collander and Guthrie put it this way: "Rational expectations . . . addresses the question: what expectations should one assume within that model? . . . The . . . answer is simple . . . the expectations should be those that people would have if they believed the model."[11]

Frank Hahn[12], a leading critic of rational expectations, bases much of his attack on the extreme informational assumptions implicit in rational expectations. Hahn is particularly critical of Hayekian presumption that the essence of the price system is its ability to aggregate information to such an extent that the economy behaves as if there had been no specialised information to begin with. Specialised information is, after all, common place.

In the business world, for example, a distinction has to be made between experts and novices. What distinguishes the two is precisely how each of them copes up with each one's levels of information. Experts are such because they have accumulated, through their experience in any environment, a vast reservoir of knowledge that they can at any time tap almost intuitively. By contrast, rational expectations implicitly assume that all agents base their decisions upon large quantities of stored information that can be tapped at will, as well as previously learned decision procedures. It is not possible for everyone to have the same information. Indeed, it is usually not even desirable as this would ultimately deny entrepreneurship itself. Rational expectations, then, does not explain how individuals are supposed to learn, only why they should.

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[7] *Ibid.*, p. 460.

[8] F. Modigliani: The monetarist controversy or Should we foresake stabilization policies? *AER*, **67** (March 1977), 1–19.

[9] T. J. Sargent: A classical macroeconomic model for the US, *Journal of Political Economy*, **84** (April 1976), 207–237.

[10] M. R. Darby, Three and a half million U.S. employees have been misled, or, An explanation of unemployment 1934–1941, *JPE*, **84** (February 1976), 1–16.

[11] D. C. Collander and R. S. Guthrie: Great expectations: What the Dickens do 'rational expectations' mean?, *Journal of Past-Keynesian Economics*, 3 (Winter 1980–81), 222.

[12] F. H. Hahn: Reflections in the invisible hand, *Lloyds Bank Review*, **144** (April 1982), 1–21.

A seventh criticism against rational expectations is that it is absurd to assume individuals can make the necessary calculations to arrive at the "rationally" expected level of inflation. This is somewhat reminiscent of criticisms of macroeconomics on the grounds that most consumers do not know what a Lagrangean is. The real issue at stake is whether or not 'inflationary expectations' get built into most future contracts among economic agents, i.e., whether inflation is anticipated and to what extent. Here the experience of the developed economies especially the U.S. is illuminating. In the 1960s even though inflation was present, the empirical evidence shows that over the decade 1960–70 the rational expectations hypothesis did not stand up well, i.e., that inflation was not being fully anticipated. But after 1970, inflation seems to have been accepted more or less as a permanent feature, and come to be 'anticipated' more or less fully. This assertion is borne out by the fact that the rational expectations hypothesis performs much better on the empirical data after 1970. This means that the parameters of econometric models are not going to remain passive in the face of economic policy manipulations.[13]

A further dimension to the hypothesis is whether any policy rule that the authorities are following can be estimated by the public. Here the real issue is not whether every worker can guess this rule correctly but whether the organizations like trade unions which conduct wage negotiations on their behalf can estimate this rule. Thus the point at stake becomes whether the important contracting agents in an economy like corporations, trade unions and others can use past information rationally to rationally forecast the future. In a developed economy where data is published on a regular basis, this assumption does not seem very far-fetched.[14]

Non-acceptance of the rationality hypothesis begs the question about what kind of non-rationality to assume. Nobody is denying that some people are irrational. But there is no reason to believe that those irrationalities cause systematic and predictable deviations from rational behaviour that a macroeconomist can model and tell the monetary authority how to compensate for. To conduct a successful countercyclical monetary policy, there must be systematic deviations from rational expectations which the monetary authority somehow knows about and can predict.

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[13] D. M. Nachane: Rational expectations: Consequences for theory and policy (paper read on 7th February 1983 on post-Keynesian Economics, at Lala Lajpathrai College, Bombay), p. 12.

[14] *Ibid.*

Notwithstanding these critiques, several important lessons from the rational-expectations macroeconomics are worth heeding. For one, the debate has forced economists to consider expectations more carefully. Earlier theories—one's assuming mechanically formed expectations—will no longer do, particularly for speculative markets like stock and bond markets. In addition, macroeconomics must consider carefully how people react to economic policies. It is clear that people do learn fast, and that the solutions to yesterday's macroeconomic problems may not work today, for people may have adapted their behaviour in the light of yesterday's solutions.

In the end, the rational expectations revolution may lead to a new synthesis incorporating the strengths of the new view with the durable elements of modern mainstream macroeconomics. Thus, it may be a useful approximation to assume flexible prices and rational expectations as a way of explaining financial markets (including interest rates, stock prices and foreign exchange rates). But macroeconomics will probably be better served by retaining the presumption that in other markets—particularly labour markets—prices or wages take months or years to adjust to shocks.

A synthesis of market-clearing and sticky-wage elements will find impacts of economic policy far different from those in early neanderthal Keynesian models; but, unlike the oversimplified rational-expectations models, a synthesis will show that economic policy can have a significant effect on prices, output and employment.

Rational Expectations and Economic Policy

Perhaps, to the non-specialist at least, the somewhat irksome concept of rational expectations comes alive only when it is related to policy. Friedman's proposal for "monetary targets"—that is, that the annual rate of growth of the money supply in whatever manner defined should not exceed the rate of growth of real G.D.P.—can now more properly be understood. The vital response to monitor is that of individual agents in the economy, whether consumers, investors, speculators, or trade union negotiators. If, in forming their expectations, individuals do not make systematic errors, but only random ones, they will forecast money supply changes using all the information available to them, such as the budget deficit and the balance of payments indicator. Therefore, the extent to which there is a difference between planned policies and implemented policies will determine the outcome. In this context, announcement effects are important.

Forecast or anticipated changes in policy, then, do not create any problems for the individual economic agent. Moreover, the extent to which the actual growth in the money supply is split between a forecast or announced component and an unannounced component will determine the channels through which monetary policy can affect the "real economy". Expectations formation will be more "rational", the closer the monetary authorities keep to their announced targets. In practice, this division between announced and unannounced monetary expansion can be gleaned from proxies such as the budget deficit or activity in the foreign exchange market. So, as well as having information on monetary policy, agents must gather information on how the different tools of monetary policy interact with fiscal policy or the exchange rate. To a degree, this is what the "Rules vs. Discretion" debate is all about (Sargent and Wallace 1976; Barro 1976 and 1977; Kydland and Prescott 1977; Fischer 1977; Phelps and Taylor 1977; McCallum 1977).

The obvious implication of rational expectations is that monetary targets would provide little scope for activist Keynesian policies. In such a regime, the mechanism by which a previously unannounced increase in the money stock is transmitted to the real economy would be the "real balance effect"—the increase in the money stock would be accompanied by an increase in the price level in order to maintain real balances at the required level. Certainly, if, and only if, expectations are rational (in the sense defined by the rational expectations hypothesis), an increase in the money stock even when it is unannounced, as long as it is a once and for all increase, and recognized immediately as such, will still have a neutral effect in the long-run. This is so because it will lead ultimately to an increase in the price level and all real variables will therefore remain unchanged. However, some important policy issues remain unexplained. How long is the long-run? What transpires in the immediate and intermediate periods? Will the supply side of the economy respond even when expectations are rational or at least predictable? Additionally, not all unannounced monetary increases need necessarily be destabilising. What if there is substantial slack in the economy and credit-creation may have been unnecessarily restrained in the past? An unannounced increase in the money supply may be just what is required to boost pent-up aggregate demand. On questions such as these, this new classical macroeconomics, with sane exceptions, has been ominously silent.[15]

Certainly, some versions of rational expectations suggest that providing that information regarding the structure of the economy and the Government policy remains unaltered, rational expectations formation will facilitate the achievement of a convergent path involving perfect foresight.[16]

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[15] W. H. Buiter: The macroeconomics of Dr. Pangloss, *Economic Journal*, **90** (March 1980), 34–50.

In a way we can now better appreciate why some vociferous advocates of rational expectations believe that all unemployment is essentially voluntary.[17] From the individual's point of view, unemployment, albeit with low rewards, is more rational than employment, with slightly higher rewards. This is a perfectly logical extension of the rational expectations schema. A government, under a regime of rational expectations, however hard it tries, cannot systematically manipulate the forecasting error, because the actual unemployment rate will deviate only randomly from its natural level.[18] In other words, the Phillips curve is vertical even in the short-run.[19]

Policy Implications: Some Fundamental Criticisms

Firstly, if we are to accept the concept of rational expectations, all activist policies would be discredited under all circumstances and in all time periods. In reply it must surely be the case that the degree of potency of policy will ultimately depend on the extent and type of intervention actually carried out by the Government. The post-Keynesians, on the whole, do not argue that interventionist policies always produce good results, but rather that the results depend ultimately on the operations of the Government in power, especially on the method by which policies are actually implemented. To advocates of rational expectations, this point is irrelevant. To them, all that matters is the result, not the manner of the struggle or the fight.[20]

The second point is perhaps a more damning one. Given that rational expectations implies that policy changes should be decided upon carefully, it could be argued that this may lead to a sluggishness and lethargy on the part of the Government, and ultimately, complete inertia—an inability to respond to events as they happen. Most events, including economic events, occur without warning, which makes it doubtful whether any Government, following such rigid policies as those implied by rational expectations, could cope with the changes occurring in a rapidly-changing economic environment. In this context the Government is just like the individual: the habit of caution can lead to lethargy.

The third criticism of rational expectations policies relates to the supposed displacement of the goal of full employment equilibrium output with what may be called "full information" output, and the role that individual consumer sovereignty plays in that displacement. In the rational expectations scheme of things, consumer sovereignty has experienced something of a resurrection. But this is not a realistic view of policy making. The consumers are not in fact equal partners. Indeed it is doubtful whether any Government could ever operate even as a neutral referee. This is so because Government is an interest group in its own right, in the same way that producers groups or consumers groups are.

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[16] D. K. H. Begg: *The Rational Expectations Revolution in Macroeconomics*, Oxford Philip Allan, 1982.

[17] A. P. L. Minford: Trade unions destroy a million jobs, *Journal of Economic Affairs*, **2** (January 1982), 73–79.

[18] *Ibid.*, p. 1143.

[19] H. I. Grossman: The natural-rate hypothesis, the rational expectations hypothesis, and the remarkable survival of non-market-clearing assumptions, *Carnegie-Rochtecter Conference Series on Public Policy*, **18** (Autumn 1983), 225–45.

[20] John J. Struthers, *op. cit.* (Dec. 1984), 1147.

The fourth criticism concerns the extent to which expectations, even of Government, can be regarded as homogeneous. It is evident that rational expectations has much to tell us regarding political power generally. It helps us to answer such questions as, who has the final say in political life, Government or pressure groups such as trade unions? But what it fails to recognize is that Government is unlikely to be a monolithic entity, devoid of internal wranglings and disagreement. Again, casual observation would suggest otherwise.

Despite these criticisms, it could be argued that it does serve at least one useful purpose—a pedagogic one. Rational expectations has completed the monetarist parable for us. In encouraging economists to think through the complexities of expectations formation on the part of individual economic agents, it has, therefore, provided a valid service. Before the advent of rational expectations, it is fair to say that the debate between the monetarists and post-Keynesians had become a sterile one, one dominated by disagreement about proximate targets and ultimate targets, or the relevent transmission mechanisms, and the like. Though rational expectations has not provided us with a resolution of the debate, it has at least crystallized the main issues separating the leading protagonists. So much so that it could be said that the most important area of disagreement between these schools of thought can be traced to their divergent *a priori* views about expectations.

In the same way, rational expectations has assisted economists, particularly of the non-monetarist variety, in their understanding of some of Friedman's main views, for example, the view that trade unions do not cause inflation, or that "inflation is everywhere and, at all times, a monetary phenomenon". Rational expectations is a sufficiently catholic theory (or at best it attempts to be) to allow us to understand these views in their proper setting. Friedman is not suddenly a friend of the unions, but views them merely as rational agents acting on behalf of their own members.

The weight of theoretical and empirical evidence, at least for the U.S., seems to suggest that the Rational Expectations hypothesis has come to stay. The implications of this hypothesis for other economies are under active investigation and it is too early to judge how the hypothesis will fare under differing economic circumstances.

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EDUCATION FOR ECONOMIC DEVELOPMENT: AN EMPIRICAL STUDY

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I. Introduction

The linkage between the factors affecting educational development and economic growth is very close and tight. Whereas national economy provides much of the needed finances for ensuring intensive and extensive diversification and expansion of education sector, this sector, in turn, strengthens the base of human capital formation which caters for the manpower requirements of all kinds and levels of the economy. Without the development of human resources, the impact of which is intense and pervasive on all the processes of economic and social progress, the acceleration of economic growth and the sustenance of the same at a high level are difficult. It follows that in order to generate additional income with a view to raising the quality of life of people, a concerted effort ought to be made for ensuring an all round improvement in productivity of various factors of production which is possible only if the new knowledge, technological know-how and managerial skills are increasingly applied in every sphere of productive activities. This therefore calls for designing appropriate strategies of educational planning, such that the human capital is sufficiently nurtured and strengthened so as not only to meet the manpower requirements of the country but also to satisfy the educational needs of a cross section of society. The realization of such perceived needs for educational development requires, *inter alia*, adequate level of investments in education, the implication of which is that a specific proportion of national income should be allocated to education sector with a view to making available enough finances for extending and upgrading necessary educational infrastructure. In view of the vital role of education for stimulating desirable changes in the socio-economic setting and for creating conditions for relevant reforms, the Education Commission (1966) thoroughly examined the relationship between education and economic development and emphasised the need for ensuring a minimum threshold of investment on education. The Commission stipulated that the proportion of educational expenditure to national income (the ratio, hereinafter) should be gradually raised to at least 6 per cent by the year 1985. This recommendation was made against the background of a slow rise in the ratio from 1.9 per cent in 1950–51 to 2.9 per cent in 1966. During the Commission's post-recommendation period, the

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ratio has marginally improved and risen to about four per cent in 1986–87. These evidences clearly indicate that even though more than two decades have lapsed, the ratio has not reached the level suggested by the Commission. Moreover, a close examination of the allocation of budgetary resources over the plan periods reveals that the expenditure on education has steadily declined from 7.2 per cent of the total national budget in the First Plan to 3.6 per cent in the Seventh Plan. The declining trend in educational expenditure might have a considerable bearing on policy implications for two reasons. First, as more than 60 per cent of the Indian population is still illiterate, a large number of people have to be covered under the network of educational programmes and that too, under the obligation of Constitutional commitment. Second, as the effects of education on socio-economic activities are undoubtedly positive and strong, an inadequate allocation of resources for education, as noted above, would impinge on the efforts to build up a strong base of human capital as well as on the attempts to attain a sustainable high rate of growth of income generation.

In view of the foregoing considerations, the major objective of this paper is twofold: one is to examine the extent to which financial resources have been devoted to the development of education since 1950–51; and the second is to ascertain whether or not the overall trend in allocation of resources is compatible with the aim of liquidating illiteracy and raising the productivity of the labour force so as to accelerate the pace of economic development. A detailed discussion on both the above aspects is imperative because the summary results of our statistical exercises have demonstrated that there is downward trend in the educational efforts as measured by income elasticity of expenditure on education. We have found that with each unit increase in income, the corresponding increase in the amount of expenditure incurred on education has declined throughout the plan periods. This is despite the fact that the relationship between education and the major indicators of development is found to be positive and strong. There is, therefore, a *prima facie* case for reversing the down trend by way of pursuing a prudent fiscal approach to resource allocation for education. It is mainly this conclusion in support of which the trend in educational expenditure and the extent of association between education and economic growth are empirically dealt with in this paper. The plan of the paper is as follows. Section II outlines the methodology of our analysis of the pattern of educational expenditure. Section III presents the statistical results and discusses the pattern of educational expenditure and its relationship with income. This section also assesses the impact of inflation on expenditure and quantifies the extent of erosion in educational expenditure due to inflation. Section IV examines the nexus between literacy and the major indicators of development like income and population growth. The last Section V draws major conclusions and discusses the implications for policy formulation.

II. Methodology

The accepted technique of regression analysis was employed for examining the extent of relationship between the educational expenditure and economic development. The objective of this approach of analysis is to establish an average degree of relationship between the changes in expenditure on education and some measure of the capacity to finance education. On normative considerations, gross national product or per capita income are generally taken to be the proxy variables to represent the capacity of a country to finance expenditure. The functional form of the equation used for estimating the relationship is of the type

$$E = a + bY \tag{1}$$

where E and Y denote expenditure and income variables, respectively, and a and b are regression parameters.

Such a linear function may be specified on the assumption that annual increase in educational expenditure is constant.

In order to calculate the educational expenditure elasticity, the following type of function was tried

$$E = aY^b \tag{2}$$

when this exponential form of equation is transformed into logarithmic, we obtain:

$$\log E = \log a + b \log Y \tag{3}$$

when this form of equation is fitted to the data, the regression co-efficient (b) i.e. expenditure elasticity gives the percentage change in educational expenditure (E) which commensurately changes with one per cent change in income (Y).

In order to measure the extent of influence exerted by the rise in per capita income on the changes in expenditure ratio, the following type of equation was specified

$$\log (E/NNP) = \log a + b \log Y_p \tag{4}$$

where NNP is net national product i.e. national income and Y_p denotes per capita income; and a and b are regression parameters as mentioned earlier.

As the data relating to both educational expenditure, national income and per capita income are generally available at current prices, the data as such give no idea about the effects of changes in prices on the above variables. Since India's economic development during the past decades is characterised by steady rise in prices, it is important to isolate the impact of rise in prices on educational expenditure. This is mainly because educational efforts are conditioned, *inter alia*, on the changes in prices which adversely affect the real value of educational investment.

It must be mentioned, in passing, that while the behaviour of prices has shown a great deal of fluctuations in the past, the trend is clearly discernible and indicates that the rate of inflation during 1960 to 1980 was 7.6 per cent per annum. When the rate of change in prices for the last two decades was observed separately, it shows that the index of prices rose at the rate of 6.5 per cent and 8.7 per cent per annum respectively. In the 1980's the average rate of increase in prices has generally been about 10 per cent or so. These evidences provide considerable support to the view that the real value of educational expenditure might have been adversely affected due to the inflationary conditions that prevailed in the past. The effect of inflation is needed, therefore, to be isolated in order to make an objective assessment of the educational investments.

To do this, implicit income deflator was used as an additional variable so as to separate out the effects of rise in prices. Implicit income deflator is computed by dividing national income at current prices by national income at constant prices. The following forms of functions were fitted to the data

$$\log E = \log a + b \log Y_{rn} + c \log pd \tag{5}$$

and

$$\log (E/NNP) = \log a + b \log Y_{rp} + c \log pd \tag{6}$$

where E and NNP are educational expenditure and net national income at current prices, Y_{rn} and Y_{rp} are real national income and real per capita income respectively, and pd is price deflator. Among other parameters a is intercept, b and c are partial elasticities.

All the above formulations were tried in this exercise in order to assess the strength of association between educational expenditure, income and prices during the last three decades and also for the different subperiods. In addition to these, the statistical correlation technique was also employed so as to quantify the degree of relationship between (i) literacy and per capita income; (ii) literacy and birth rate; and (iii) illiteracy and poverty ratio.

While carrying out the above exercises, both the types of data-time series and cross-section were used as per the requirement of the techniques explained above.

The results derived from the application of the above methodologies are displayed and discussed in Section III and Section IV of this paper.

III. Educational Expenditure, Income and Inflation: Some Evidences

The following conclusions emerge from the analysis of the results of our econometric exercises. An examination of the trend in growth of educational expenditure reveals that the magnitude of additional expendiure on education associated with each unit of incremental national income has declined over the past decades. On an average, an increase in national income by Rs. 100 has led to an increase in expenditure by Rs. 3.7 only during the period 1951 to 1983. Table 1 presents the relevant results of our regression analysis. A disaggregated analysis for different periods showed that during the first decade of planning period i.e. 1951–1960, an amount of Rs. 4.4 was spent on education out of each additional increase in national income of Rs. 100. In the subsequent decades, the incremental expenditure on education associated with the national income was even less i.e. Rs. 3.4 and Rs. 3 for the period 1961–70 and 1971–83 respectively.

TABLE 1

ESTIMATED RELATIONSHIP BETWEEN EDUCATIONAL EXPENDITURE AND NATIONAL INCOME (RESULT FOR LINEAR FUNCTION: $E = a + bY$)*

Period	Intercept	National income	R^{-2}	T-value†
1951–83	**−163.52**	**0.037**	**0.998**	**96.64**
1951–60	−244.75	0.044	0.930	7.28
1961–70	−90.72	0.034	0.991	20.91
1971–83	−154.97	0.036	0.995	33.90

*E and Y refer to educational expenditure and national income respectively and a and b are regression parameters.

†The results are significant at one per cent level.

TABLE 2

EDUCATIONAL EXPENDITURE ELASTICITY

(Results for log linear function: $\log E = \log a + b \log Y$)*

Period	Intercept (a)	National income (b)	R^{-2}	T-value†
1951–83	**−2.80**	**1.28**	**0.989**	**37.28**
1951–60	−6.86	2.28	0.900	5.83
1961–70	−2.13	1.14	0.990	20.89
1971–83	−1.82	1.07	0.992	26.19

For notations see footnote in Table 1.

The estimates of income elasticities of educational expenditure lend considerable support to the above observations (Table 2). The expenditure elasticity emerged out to be 1.28, for the period 1951–83, which shows that educational expenditure increased by 1.28 per cent per annum due to one per cent increase in national income. The decadewise decomposition of elasticity co-efficients indicated that during the first decade of planning era i.e. 1951–60, the elasticity co-efficient was the highest i.e. 2.28 and for the subsequent decades 1961–70 and 1971–83 the co-efficients declined to 1.14 and 1.07, respectively, which are substantially lower as compared to the co-efficient for the first decade. Although the expenditure elasticities for the above periods have generally merged out to be above unity, meaning thereby more than proportionate increase in educational expenditure, the declining trend in elasticity co-efficients indicated that there has seemingly been inbuilt tendency in the overall mechanism of distribution of resources to allocate relatively less and less of financial resources out of every unit increase in national income. It follows that educational efforts have steadily declined over the above successive periods. The policy implications arising out of this evidence will be discussed separately in Section IV.

The magnitude of change in educational expenditure related with income, as discussed above, encompass *inter alia* the effects of rise in prices which inflate the volume of expenditure but reduce its real value. In order to gain some idea of the extent of impact of inflation factor on the educational expenditure, an attempt was made to introduce an additional variable in our econometric equation with a view to isolating the effects of prices on expenditure. With this view in mind, the data on educational expenditure was regressed on both the national income (real) and the implicit income deflator. It is important to point out that, due to the lack of desirable data, it was assumed that the educational price deflator, based on rise in teachers' salary, costs of supporting educational materials like building and stationery etc., would not be significantly different from the income deflator. The income deflator would, therefore, provide a reasonably reliable estimate of price effects on educational expenditure.

The relevant econometric results are displayed in Table 3 which shows

TABLE 3

PARTIAL EXPENDITURE ELASTICITIES OF INCOME AND PRICE

(Results for log linear function: $\log E = \log a + b \log Y_{rn} + c \log pd$)

Period	Intercept (*a*)	National income (real) (*b*)	Price deflator (*c*)	R^{-2}
1951–83	**−10.91**	**2.95** **(19.23)***	**0.29** **(3.12)***	**0.997**
1951–60	−11.30	3.00 (13.11)*	0.41 (1.12)	0.979
1961–70	−4.27	1.10 (2.50)*	1.15 (6.46)*	0.990
1971–83	−9.52	2.64 (6.35)*	0.31 (1.80)†	0.986

For notations please see footnote in Table 1.
*Significant at one per cent level.
†Significant at 5 per cent level.
Figures in parentheses indicate *T*-values.

the partial expenditure elasticities with respect to real income and prices. As may be expected on the *a priori* grounds, the results for 1951–83 revealed that the growth of educational expenditure is largely determined by the increase in real income. The inflationary factor has contributed marginally in inflating the magnitude of expenditure. This is evident from the partial elasticities which emerged out to be 2.95 and 0.29 respectively for real income and increase in prices. These results may be interpreted as follows: Due to one per cent increase in real income and inflation, the corresponding increase in educational expenditure was 2.95 per cent and 0.29 per cent respectively which suggested that while responsiveness of expenditure to real income was duly high and above unity, the growth in expenditure due to inflation factor was unduly much lower than unity i.e. 0.29, the increase in expenditure was thus inadequate to offset the impact of rise in prices on educational expenditure. The impact of both the variables conformed to the theoretical expectations that: (i) the rise in real income ought to encourage more investment on education and (ii) the inflationary conditions would have positive effect in inflating the volume of expenditure though the extent to which inflation should have increased the expenditure in order to nullify the inflationary impact was much less than desirable. The comparisons of the partial elasticities for the different decades indicated that inflation induced growth in educational expenditure was relatively higher (1.15) during the decade 1960–71 as compared to 1951–60 (0.41) and 1971–83 (0.31). While the partial elasticity co-efficients for price deflator emerged out to be generally significant at one per cent level, there seems to be no systematic pattern of change due probably to fluctuations in prices over the period under our analysis. The conclusion, however, emerges that: (i) both the variables, real income and price changes, possess considerable determining power and explain 99 per cent of variations in educational expenditure; (ii) the growth in educational expenditure is highly responsive to increases in real income since over the period of our analysis one per cent increase in real income has led to about 3 per cent increase in expenditure which is, on an average, a highly desirable trend for speedy educational development; (iii) under the prevailing mechanism of resource allocation for education, erosion in real value of expenditure due to rise in prices does not automatically get offset as the relevant partial elasticity has emerged out to be much less than unity; and (iv) as long as the growth in real income of Indians remains tardy as has been the case in the completed plan periods, there is no hope for appreciable step up in the rates of increase in investments on education, unless, of course, the long term income constraint is overcome.

As pointed out earlier, the expenditure ratio, i.e. educational expenditure as a proportion of national income, has not risen to the level stipulated by the Education Commission and that the rate of increase in the ratio has been declining over time. For instance, the ratio improved from 1.9 per cent in 1950–51 to 2.6 per cent in 1960–61 i.e. a relative increase of 37 per cent. In 1970–71 this ratio rose to 3.3 per cent, i.e. a relative increase of 27 per cent over the ratio for 1960–61. Similarly, in 1986–87 this ratio reached to about 4 per cent which exhibited for the deceleration in the percentage increase in the ratio over the period beginning from 1970–71. The deceleration in the rates of increase in the ratio has considerable bearing on the efforts to liquidate mass illiteracy and to improve the relevance and quality of education. In view of the significance of this finding an attempt was made to examine the extent to which the expenditure ratio is influenced by per captia income and rise in prices.

Table 4 presents the results of income elasticity of expenditure ratio.

TABLE 4

INCOME ELASTICITY OF EXPENDITURE RATIO

(Results for log linear function: $\log (E/NNP) = \log a + b \log Y_p$)

Period	Intercept (a)	Income (per capita)	R^{-2}	T-values
1951–83	**0.46**	**0.35**	**0.80**	**7.43**
1951–60	−1.97	1.34	0.49	1.60
1961–70	1.05	0.16	0.64	2.35*
1971–83	1.27	0.09	0.44	1.61

Notes: Expenditure Ratio refers to educational expenditure (E) as a proportion of net national income (NNP).

Y_p is per capita income and a and b are regression parameters as mentioned earlier.

*Significant at one per cent level.

The elasticity co-efficient for 1951 to 1983 showed that due to one per cent increase in per capita nominal income, the expenditure ratio rose by 0.35 per cent. The comparisons of elasticity co-efficients for the different decades demonstrated that the expenditure ratio rose by 1.34 per cent due to one per cent increase in per capita income in 1951–60. For the subsequent decades, the correspondence between the relative rise in expenditure ratio owing, of course, to increase in per capita income has deteriorated considerably. These evidences conformed to our earlier observations that the rate of growth of expenditure ratio has decelerated and that there has been an inbuilt tendency to spend less and less amount of money on education, out of each unit increase in income.

The continuing inflationary conditions have, moreover, adversely affected the expenditure ratio. When the inflation factor was introduced as an additional variable in the above formulation, the results indicated that the phenomenon of rise in prices has contributed negatively to the expenditure ratio. Table 5 presents the results. It might be observed for the period 1951 to 1983 that while the real per capita income contributed

TABLE 5

PARTIAL ELASTICITIES OF INCOME AND PRICE

(Results for log linear function: $\log (E/NNP) = \log a + b \log Y_{rn} + c \log pd$)

Period	Intercept (*a*)	Real income per capita (*b*)	Price deflator (*c*)	R^{-2}
1951–83	**−6.48**	**3.02** **(7.23)***	**−0.22** **−(2.31)***	**0.933**
1951–60	−9.12	3.86 (4.62)*	0.31 −(0.49)	0.850
1961–70	1.36	−0.09 −(0.16)	0.18 (2.07)*	0.610
1971–83	−1.66	1.22 (3.26)*	−0.11 (1.55)	0.720

*Significant at one per cent level.

positively to the ratio, the rise in prices has tended to reduce the ratio as the coefficient emerged out to be negative. The short-term decade-wise analysis conformed to the long term observations as might be seen in the said table. The purpose of this discussion is to demonstrate that price changes have negatively affected the expenditure ratio.

The above findings raise a vital question as to whether the trend in the declining rate of incremental expenditure, especially in view of the perceived need for huge investments for the development of education is consistent with the national aspiration to liquidate illiteracy among 60 per cent of Indian population and the need to increase the proportion of educated and skilled manpower in the total labour force. In view of the vital role of education in nurturing and strengthening the base of human capital formation which helps expedite the process of economic and social development, the downward pattern in financing of education especially at a time when at least more than fifty per cent of the population is yet to be covered under educational programmes is undoubtedly contrary to the national aspiration for creating an educated society. Even though the income constraint has been the major detrimental factor, a relatively low level of money resources devoted to education is indicative of the fact that the economic planners and policy-makers have unduly underrated the contribution of education in promoting the economic growth and in improving the quality of life. Education has not been accorded its due place in economic planning despite the fact that it plays a determining role in bringing about desirable changes in the socio-economic system of the country. In the following Section IV, we shall deal with the question of an interlink between literacy and some major indicators of economic development with a view to examining whether or not educational efforts have been unduly below the expected level.

IV. Analysis of Interlink Between Indicators of Development

Education is the most important single factor which promotes economic growth through improving efficiency and thereby raising productivity, which, in turn, are dependent on the adoption of modern techniques of production based on the development of science and technology. The assessment of the indicators of educational and economic development has revealed that education has not been properly geared to economic growth during the plan periods. It may be pointed out that a high rate of increase in industrial production (6.1 per cent per annum) as compared to a low rate of growth for agricultural production (2.7 per cent per annum) over the last three decades of planning conformed to the pattern of increase in student enrolments in different levels of education, as this pattern suited more to the requirements of industrial development (See author's 'Education and Economic Development: Perspectives for Policy Planning', AIU, 1987). It was observed that the rate of increase in enrolments as well as educational facilities, at lower levels, was much below the rates for the secondary and higher education. It was inferred, therefore, that the educational planning in India has not paid due attention to the programmes which could have expedited the process of liquidation of mass illiteracy. In the beginning of the planning, as we all know, agricultural sector alone contributed more than 60 per cent of national income and absorbed about three-fourths of the total labour force. In view of such a high share of agricultural sector and labour abundant economy, one of the strategies of development should have been to speed up the efforts to improve the levels of enrolment and rates of retention of students, especially at the elementary stage. The efforts in this direction could have been geared with a view to ensuring that all the labour intensive sectors like agriculture, agro-based industries and other small scale industries are provided with a relatively more literate and reasonably better skilled workers. Moreover, the responsiveness of the poor people to the poverty alleviation and other social programmes as launched by the Government from time to time would have increased to the advantage of the whole society. Also, the increased entrepreneurial capacity would have enhanced productivity and production. One of the reasons for the poor performance of the national economy which is reflected from 1.5 per cent per annum increase in per capita income over the entire planning period is attributable to the relative neglect of lower level of education which has resulted in leaving a considerably high proportion of people as illiterate and unskilled and therefore economically less active than otherwise would have been the case. The pace of economic growth could not therefore be increased to the extent stipulated by each Five Year Plan owing to the lack of human resource development. The following evidences confirm the positive influence of education on development.

The study of the relationship between the rate of literacy and the per capita state domestic product across the Indian states for the census years, namely 1961, 1971 and 1981 showed a positive and tight association. Table 6 presents the relevant data. The correlation co-efficients for the above years emerged out to be 0.631, 0.798 and 0.716 respectively. All these co-efficients are statistically significant and are true for the 13 states which cover 80 per cent of the aggregate Indian population. These results suggested that for raising per capita income, literacy programmes should be given a reasonably high priority. This finding was duly corroborated by some other relevant evidences which we shall discuss below.

TABLE 6
RELATIONSHIP BETWEEN LITERACY AND PER CAPITA INCOME CORRELATION COEFFICIENT

States	1961		1971		1981	
	Literacy (%)	Per capita state domestic product (Rs.)	Literacy (%)	Per capita state domestic product (Rs.)	Literacy (%)	Per capita state domestic product (Rs.)
1. Andhra Pradesh	21.19	275	24.56	584	29.94	1313
2. Assam	27.47	315	28.81	539	30.00	1242
3. Bihar	18.40	215	17.79	402	26.20	927
4. Gujarat	30.45	362	35.72	829	43.70	1866
5. Himachal Pradesh	21.26	359	31.32	678	42.48	1458
6. Jammu & Kashmir	11.03	269	18.30	548	36.67	1439
7. Karnataka	25.40	296	31.54	685	38.48	1352
8. Madhya Pradesh	17.13	260	22.12	483	27.87	1177
9. Maharashtra	29.82	409	39.08	784	47.18	2277
10. Orissa	21.66	216	26.12	482	34.22	1147
11. Punjab	26.74	366	33.39	1030	40.86	2642
12. Uttar Pradesh	17.65	352	21.64	486	27.16	1272
13. West Bengal	29.28	390	33.05	712	40.74	1545
Correlation coefficient	$r = 0.631$		$r = 0.798$		$r = 0.716$	

Note: All the 13 states considered in this exercise, cover 80 per cent of the Indian total population.

Source: Census of India (Various issues).

An examination of the nature of association between the proportion of people below the poverty line and the proportion of illiterate persons indicated an expected positive relationship. Table 7 exhibited that the Pearson's Rank Correlation Co-efficient between the ratios of poverty and

TABLE 7

RELATIONSHIP BETWEEN PROPORTION OF PEOPLE BELOW POVERTY RATIO AND THE PROPORTION OF ILLITERATE POPULATION

States	Ranking of the states according to the proportion of people	
	Below poverty ratio (latest) 1978	Illiterate 1981
1. Orissa	1	7
2. Madhya Pradesh	2	3
3. Bihar	3	1
4. West Bengal	4	11
5. Assam	5	5
6. Uttar Pradesh	6	2
7. Karnataka	7	9
8. Meghalaya	8	6
9. Maharashtra	9	16
10. Kerala	10	17
11. Andhra Pradesh	11	4
12. Gujarat	12	15
13. Manipur	13	12
14. Himachal Pradesh	14	13
15. Haryana	15	8
16. Punjab	16	10
17. Nagaland	17	14

Rank Correlation Coefficient (r) = 0.61.

Notes: (1) Rank Correlation Coefficient was obtained by using the following formula:

$$r = 1 - \frac{6D^2}{N(N^2 - 1)}$$

where, r = rank correlation coefficient
D = difference between two ranks
N = No. of observations.

(2) These states cover 85.3 per cent of India's Population in 1981.

(3) The proportion of illiterates was worked out on the basis of Census figures for 1981 and accordingly states were arranged in descending order.

Source: Sixth Five Year Plan Document and Census of India 1981.

illiteracy was 0.61. This result is true for 17 states which represent 85 per cent of the total India's population. The results demonstrated that poverty and illiteracy move in the same direction and reinforce each other and, thus, generate dampening effects on each other. Because, in the regions where there are more illiterates the intensity of poverty is accordingly high. Fig. 1 clearly demonstrates this.

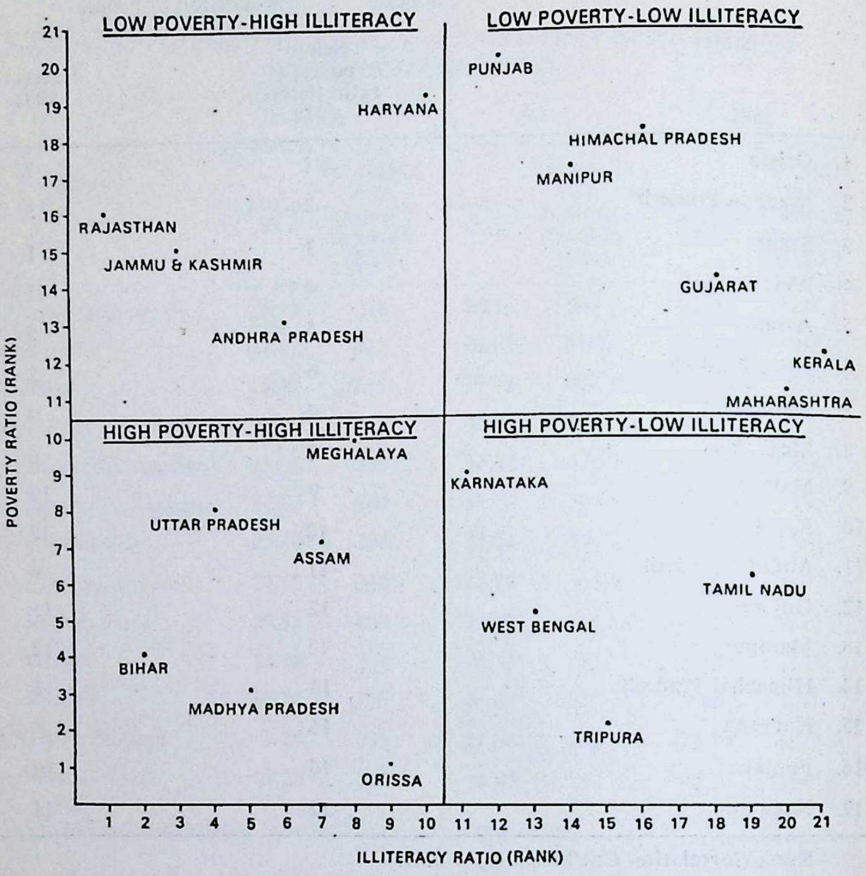

Fig. 1 Ranking of states according to the proportion of illiterate population and the people below poverty line.

Similarly, an analysis of the relationship between female literacy and birth rate showed the expected negative correlation (Table 8), and the correlation co-efficient was as high as —0.62 for 1981, which is statistically significant. This evidence strengthens the view that the improvement in the literacy at a faster rate, than what has been observed in the past, would have greatly assisted in arresting the population explosion which is generally alleged to be responsible for suppressing the efforts for economic development.

Briefly, the statistical analysis confirmed that the nexus between literacy and the indicators of economic growth like income and population

TABLE 8

CORRELATION BETWEEN FEMALE LITERACY AND BIRTH RATE

States	Birth Rate 1970	Literacy (Female) 1971	Birth Rate 1979	Literacy (Female) 1981
1. Andhra Pradesh	35.4	15.75	31.9	20.52
2. Assam	38.8	18.63	32.4	N.A.
3. Bihar	32.0	8.72	32.0	13.58
4. Gujarat	41.0	24.75	35.7	32.31
5. Himachal Pradesh	32.7	20.23	31.8	31.39
6. Haryana	36.2	14.89	36.4	22.23
7. Jammu & Kashmir	33.0	9.28	31.1	N.A.
8. Kerala	31.6	54.31	26.1	64.68
9. Karnataka	33.0	28.97	28.9	27.83
10. Madhya Pradesh	29.3	10.92	37.8	15.54
11. Maharashtra	31.5	26.43	27.1	35.08
12. Manipur	34.1	19.53	30.0	30.69
13. Orissa	38.1	13.92	32.4	21.11
14. Punjab	33.8	25.9	29.3	34.14
15. Rajasthan	38.5	8.46	35.2	11.32
16. Tamil Nadu	30.0	26.86	28.1	34.12
17. Uttar Pradesh	45.4	10.55	39.6	14.42
18. West Bengal	27.8	22.42	28.0	30.33

Correlation Coefficient between Literacy and Birth Rate is

(i) $r\,(1971) = -0.294$

(ii) $r\,(1981) = -0.619$

Source: Census of India, 1971 and 1981.

is indeed strong. The pace of economic development could therefore be accelerated by maximising (minimising) the influence of the factors which contribute positively (negatively) to economic growth. As the development of human resources is crucial for economic and social progress, the exercises in planning for development ought to place due emphasis on promotion of educational programmes.

V. Policy Implications

The process of national planning has indeed completed more than three decades, yet the perpetuation of educational crisis has not been alleviated to the desirable extent. This is reflected from (a) inability to make deep dent in the area of mass literacy, as is obvious from the fact that (i) more than 60 per cent of the Indian population have hardly received the benefit of educational net work of programmes and (ii) the number of illiterates has steadily been rising; (b) non-achievement of the goal of universal primary education, as at least 15 to 20 per cent of the children especially of the parents who live under abject poverty, never enter the school and therefore do not taste the fruits of educational schemes; (c) inadequacy of the provisions for ensuring equity in extending educational services across the regions as well as different socio-economic groups of the people, as has been established from the pattern of drop-out at different stages of schooling, especially of the children from poor families; (d) deterioration in quality and relevance of education; and (e) lack of proper linkages between education and employment opportunities which has aggravated the problem of unemployment; thereby increasing the loss of physical and financial resources on account of both expenditure on education of students and unutilization of educated manpower.

A composite effect of all these inadequacies has resulted in a relatively low level of contribution of education to socio-economic development. Our foregoing discussion, in Section III, revealed that the educational efforts, as measured by both the proportion of educational expenditure to national income and income elasticity of expenditure, have recorded downward trend over the each successive decades in the past. Further, as may be expected the rise in prices have adversely affected the expenditure on education; thereby reducing the expenditure ratio. The implication of these evidences is that the educational crisis, as described above, would seemingly perpetuate in future because increase in educational expenditure due to per unit increase in income has been declining which is not a desirable trend in view of the fact that two third of the Indian population which is yet to be covered under the literacy programmes would require an increasingly high level of plan outlays.

Our tentative results suggested that the downward trend in educational efforts is needed to be reversed by way of earmarking adequate funds for educational development. Such an attempt would greatly assist in liquidating mass illiteracy and would, therefore, provide considerably high quality of human capital in terms of levels of education and training in skills etc. The increased base of human capital formation would, in effect, bring about improvements in productivity in every sector of the economy by way of stimulating people's participation in productive activities. This would in turn lead to improvements in the quality of life due to the positive effects of increased income.

Our analysis, in Section IV, lends considerable support to the view that level of literacy contributes significantly to growth in income. The co-efficient of correlation between literacy and per capita income across the Indian States was positive and highly significant. The co-efficient also indicated that in the regions where there are more illiterates, the intensity of poverty was accordingly high and vice-versa. The result indicated that poverty and illiteracy move in co-direction and re-inforce each other such as to create dampening effects on each other that perpetuate both poverty and illiteracy. Both the problems are therefore needed to be tackled simultaneously by way of evolving integrated approach to alleviate poverty and liquidate mass illiteracy. The various programmes pertaining to mass literacy, poverty, employment, health and nutrition etc. should not be conceived and launched in isolation from each other. Because a considerable majority of those who are illiterate are caught up for centuries in the quagmire of poverty and are deprived of all basic human needs including clean drinking water. The education system should therefore establish linkages with other socio-economic systems such that suitable conditions are created for attracting and retaining students from educationally backward classes. It is more so also important to ensure that the learning process becomes a lifelong phenomenon.

While the growth in population is one of the major factors which has added to the number of both illiterates and poor people, the results of our exercise exhibited the expected negative relationship between literacy and birth rate. It suggested therefore that the problem of growing population could be effectively checked provided that vigorous efforts are made to raise the level of literacy along with, of course, other relevant population control measures. In brief, the results of our exercises suggested that the process of liquidating mass illiteracy and abject poverty ought to be hastened by reversing the undue downward trend in allocation of resources for education and its efficient utilization. This would, moreover, strengthen the formation of human capital which is indispensible for building up a prosperous and healthy society that would be capable of promoting national progress at a reasonably high level and sustaining it for a long period.

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COMMENTARY

THE WORLD DEVELOPMENT REPORT 1987 ON THE BLESSINGS OF 'OUTWARD ORIENTATION': A NECESSARY CORRECTION

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Part II of *The World Development Report* 1987 (WDR), and more specifically Chapter 5, represents a confident and virtually unqualified support of what the WDR defines as 'outward orientation' as against 'inward orientation' or 'import substitution'. The reference here is specifically to the section of Chapter 5 entitled 'Why outward orientation works' (pp. 88–92). (This assertive title is indicative of the emotional fervour with which this thesis is put forward, in sharp contrast to the neutral nature of all other subtitles; even the section 'Has protectionism retarded trade?' is qualified by a question mark rather than being asserted!)

There is never any doubt, from the moment when the definitions of outward orientation and inward orientation are put forward that they will produce the predestined result of praising outward and criticising inward orientation. The definition used is one of neutrality of incentives between tradeables and non-tradeables; if outward orientation is defined in that curious way, it is clearly optimal and efficient, provided that international prices are taken as the proper signals for developing countries. In this version, export orientation 'includes efficient import substitution', and we can all agree that it is 'good', along with mother love and apple pie.

Moreover, even though there is some faint verbal recognition that economic performance and trade strategy, outward or inward, may both be due to third factors, that correlatton does not indicate causality, or that causality may in fact run the other way from performance to trade policy, all this is swept away and forgotten in the confident and triumphant assertion that 'outward orientation works'. Some criticism has already been made elsewhere.[1] My own research as well as that of others has shown that the link between outward orientation and economic performance which seemed to exist in the more prosperous and expansionist international environment up to 1973 has since been much weakened

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*I am indebted for useful comments on an earlier draft to colleagues at the Institute of Development Studies at the University of Sussex, including Christopher Colclugh, David Evans, Mike Faber, Reg Gree, Charles Harvey, John Toye and Adrian Wood. None of them has any responsiblity for the views expressed in this note.

[1] For example, Michael Prest in *The Independent*, 8 July 1987: 'An Account That Does the World Bank Little Credit'. See also the *Financial Times* editorial of 1 July 1987: 'Exports as the Key to Growth'.

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in the more unfavourable international environment after 1973, and particularly after 1981.

However, the purpose of this note is not to come back to such criticisms or other qualifications which could be made but to establish one single point which alone seems sufficient to throw grave doubts upon the WDR's methodology and findings. The main evidence of the WDR itself is that when countries are grouped in four categories, that is, strongly outward-oriented, moderately outward-oriented, moderately inward-oriented and strongly inward-oriented, their economic performance including GNP growth tends to decline as we move along the scale from the strongly outward-oriented towards the strongly inward-oriented group. (The strongly outward-oriented group consists only of South Korea, if we disregard the two city states of Singapore and Hong Kong and hence only represents the successful performance of South Korea; many students of South Korea, including some within the World Bank, have found many reasons for the success of South Korea other than 'outward orientation', and in any case heavily qualified the description of South Korea as being 'strongly outward-oriented', at least on reasonable definitions.) But the point to be made here is the fact that the category of inward-oriented countries, and especially the strongly inward-oriented countries, consists of *poorer* countries than the outward-oriented countries. As we move along the scale, there is a regression in per capita *income level* even clearer and more striking than the regression in economic *Performance* highlighted by the WDR. The inward-oriented countries analysed by the WDR started off the two periods analysed, that is, 1963–73 and 1973–85, with much lower initial income levels. This is shown in Table 1.

TABLE 1

	Outward-oriented countries		Inward-oriented countries	
	Strongly	Moderately	Moderately	Strongly
Initial per capita GNP level (1965) for period 1963–73[a]				
Unweighted average	406	426	248	263
Weighted average[b]	179	497	258	148
Initial per capita GNP level (1973) for period 1973–85[a]				
Unweighted average	1281	974	397	351
Weighted average[b]	593	692	336	189

[a]Current US$.

[b]Weighted by population share within each group of countries.

Source: World Bank, 'World Tables', 1984.

The exception to the rule of lower income levels as we move from outward orientation to inward orientation is the weighted average figure for the strongly outward-oriented countries which is conspicuously low for 1963–73. This, however, is entirely dominated by Korea which had very low income levels in 1963 and was still among the poorest countries in the world (although already slightly higher than the average of the strongly inward-oriented countries dominated by India). The case of Korea has already been separately—mentioned—to present it as a case of strong outward orientation is certainly an over-simplification. In any case, it seems dangerous to argue and give policy advice from one single case, and if each country experience is to be counted as equally important, the unweighted average seems more significant than the weighted average. If we disregard the first category of strongly outward-oriented countries, consisting of one country and two cities altogether, the lower per capita incomes among the more inward-oriented countries emerge very clearly.

Thus what the WDR analysis really tells us is that poorer countries find it more difficult to progress than countries already further up the development ladder, such as the NICs and middle-income countries. This is none other than the old principle of vicious circles of cumulative causation emphasised by Myrdal, Nurkse and other 'structuralists' so disliked by the neo-classicals who seem to dominate the WDR. Yet this essential piece of information about the different initial GNP levels of the four categories is not taken into account in the demonstration that 'outward orientation works'.

Between 1970 and 19/5 the per capita income of the lower-income developing countries increased by 1.1 per cent per annum while that of the middle-income developing countries increased by 3.7 per cent. For the period covered by the WDR analysis, that is, 1965–80, the low-income developing countries increased by 3.1 per cent whereas the middle-income oil-importing developing countries increased by 3.8 per cent and the middle-income oil exporters also by 3.8 per cent. These figures illustrate the tendency for the better-off developing countries to increase faster than the low-income countries. Essentially, what the WDR is telling us is that South Korea has done better than, say, Zambia. But would even the writers of the WDR maintain that 'strong inward orientation' is the most relevant factor in Zambia's troubles?

The fact that outward orientation does not work as well for the low-income developing countries, particularly in sub-Saharan Africa, as it does for the middle-income countries, has been noted before. The main reference here would be the study of G. K. Helleiner on 'Outward Orientation, Import Instability and African Economic Growth: An Empirical Investigation'.[2] Helleiner, who also mentions other studies with similar results,[3] concludes that: 'If there is a lesson in the experience of the African countries' interactions with the global economy during the 1960s and 1970s, it would seem to have more to do with the desirability of stabilising import volume than with that of increasing the degree of outward orientation.' He finds that:

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[2] Helleiner, G. K., 'Outward Orientation, Import Instability and African Economic Growth: An Empirical Investigation', in Sanjaya Lall and Frances Stewart (eds.), *Theory and Reality in Development*, London: Macmillan, 1986, pp. 139–53.

> As far as external influences are concerned, then, there is no evidence to support the proposition that the degree of export orientation is associated with growth performance either in Africa or in poor countries more generally; and there is support, especially powerful in Africa, for the view that greater import volume instability is associated with slower growth. (pp. 149, 146)

In the light of such findings, it seems surprising that the authors of the *World Development Report* have not thought it necessary to introduce income levels as a separate factor in their analysis, nor to consider the risk of export and import instability to which outward-oriented countries with lower income levels are exposed. Helleiner's warning that 'The governments of low-income countries in Africa and elsewhere have grounds for caution as they consider policy advice based upon evidence from samples of countries that do not look or behave like theirs' (p. 141) could in fact have been written with the *World Development Report* in mind.

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[3] In particular he mentions Michael Michaely, 'Exports and Growth: An Empirical Investigation', *Journal of Development Economics*, Vol. 4, No. 1, March 1977 and David Wheeler, 'Sources of Stagnation in Sub-Saharan Africa', *World Development*, Vol. 12, No. 1, Jan. 1984. Similar results have been obtained by Kavoussi, R. M., 1985, International Trade and Economic Development: The Recent Experience of Developing Countries', *The Journal of Developing Areas*, 19 April 1985, pp. 379–92. Kavoussi finds that while outward orientation was associated with better economic performance during the favourable global situation of 1967–73, this was no longer the case under the unfavourable conditions of 1973–77. My own extension of the Kavoussi analysis up to 1983 when conditions became even more unfavourable has confirmed his findings.

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BOOK REVIEW

REGIONAL ECONOMIC COOPERATION IN ASIA
(Bangladesh, India, Pakistan and Sri Lanka)

By CHARAN D. WADHVA, S. A. REZA, H. G. SIDDIQUI, ZAFAR MAHMOOD, S. SURESHWARAN AND Y. SCHOKMAN; published by Allied Publishers Private Limited, New Delhi, 1987; pp. vii+352, tables, references, postscript, annexures and index; price: Rs. 150

Reviewed by SADHNA GUPTA, Department of Economics, M. K. P. College, Dehra Dun, India.

The present study on "Regional Economic Cooperation in Asia" is highly significant at a time when the developing countries of Asia are facing a big challenge from growing protectionism of industrialised countries of the world. Under this environment of neo-protectionism they are faced with the problem of contracting markets for their manufactures, falling prices and adverse terms of trade for their primary products. This gloomy trading environment has created balance of payment difficulties for these countries with mounting burden of international indebtedness which has led to a slowing down of the process of growth of their economies. The book is very timely and provides an analysis of regional trade between Asian countries and possible solution for the problems of these countries in developing economic cooperation among themselves. "South-South Cooperation" is an important part of the new international economic order which the developing countries of the world have been striving for. It can go a long way in establishing self-reliance among these countries and strengthening the forces of economic growth in this region where the majority of the poor live.

The main objectives of the study under review are to assess the current state of economic cooperation and to identify some new areas of cooperation based on trade and investment in joint ventures and to some extent services between and among the developing countries of the ESCAP region. The study is of an exploratory nature and its purpose is to identify tentatively some areas of possible economic cooperation in future among the selected countries of the Asian region. The survey constitutes a case study of 'South-South Cooperation', in the region including the countries of South Asia and ASEAN groupings. The study starts with the presumption that seven countries of South Asia constituting "SARC" have displayed complimentaries of a high order and could benefit a great deal from well planned measures of economic cooperation.

The study is divided into two parts: the first part is an overview of selected economies and a summary of the major findings of the country papers and also at the regional level; part two consists of country papers by specialists on Bangladesh, India, Pakistan and Sri Lanka which provide valuable data and information on the economies of these countries and possibilities of economic cooperation among themselves and with other countries of the region.

The country paper on Bangladesh observes that its trade with countries of South Asia as well as those of ASEAN groupings has until now remained relatively insignificant. Trade intensities of Bangladesh are low for both the South Asian and ASEAN sub-regions. In 1980 the export trade intensity has been calculated as 4.56 for the South Asian region as against only 1.27 for the ASEAN group while import trade intensity was 6.50 for South Asia against 3.42 for the ASEAN grouping. It has also been found that the trade intensity of Bangladesh has tended to increase for South Asian countries while it has remained static for the ASEAN countries. The study rightly observes that balance of payment difficulties with which Bangladesh is faced has made it almost essential for her to increase its exports substantially to both the South Asian countries as well as those of the ASEAN grouping. The fast growing economies of ASEAN countries can provide a good market for Bangladesh exports. The study also provides a list of commodities in which trade can be expanded between Bangladesh and other countries of the region.

Regarding joint industrial ventures the study points out that such ventures with foreign equity participation have grown substantially in the country in its post-independence period. Much larger number of investors from South Asian countries and also from the countries of the ASEAN group have set up joint ventures in several industries in Bangladesh. From South Asian countries foreign collaborations in Bangladesh have come mainly from India. There seems to be considerable scope for such ventures from other countries of the region provided Bangladesh is able to provide necessary infra-structural facilities.

Another case study is that of Indian economy and its performance in the field of trade within the region and other aspects of economic cooperation. It has been observed that India is a major trading partner in world trade with the countries of ESCAP region, belonging to both developed as well as developing sub-regions. Recently India's trade with the ASEAN countries, notably with Malaysia, Singapore and Indonesia, has shown a significant increase mainly in imports from these countries. This shows growing complimentaries between India and the ASEAN countries. India's export trade with its Asian partners has a fairly diversified structure. It has entered into bilateral agreements of trade with several countries of ESCAP region. The study point out that there is a lot of scope for trade cooperation between India and South Asian countries. It has identified a few selected areas in which trade between India and other developing countries of the region can be substantially increased. India being industrially much more advanced and being endowed with natural resources of coal and iron ore is in a position to supply many products at competitive terms to these countries. However, the study emphasises that in order to export more to lesser developed countries of South Asia, India will have to import more from these countries.

Regarding joint industrial ventures India already enjoys leadership in setting up such ventures in the ASEAN and South Asian sub-regions. India has been able to export appropriate technology to these countries. At the end of 1981 out of 125 of Indian joint ventures abroad as many as 61 were located in the ASEAN sub-region, with greatest concentration in Malaysia followed by Singapore and Indonesia. There seems to be considerable scope for such Indian ventures in other Asian countries provided necessary infra-structural development takes place.

The study on Pakistan observes that like most other developing countries, Pakistan's trade relations have been heavily biased in favour of developed countries rather than developing countries. However, recently it has made efforts to step up its trade with developing countries of Asia like Bangladesh, Sri Lanka, India, Indonesia and Singapore, but the performance on the trade front has been erratic. Recently Pakistan's exports to South Asian countries have increased significantly but those to ASEAN countries have declined sharply, particularly to Indonesia. The intensity of export trade of Pakistan has been found higher for Bangladesh, Sri Lanka, Maldives than for other countries of South Asia. It had a tendency to decline in case of countries of the ASEAN group. On the other hand import intensity of Pakistan with South Asia as a whole showed a declining trend during the period under study. This is in spite of the fact that Pakistan's import intensity index with Bangladesh has increased substantially. The import intensity index with ASEAN group countries remained relatively stagnant at low level. The study has indicated some potential products in which Pakistan's trade can be expanded with countries of South Asia and ASEAN groupings in future. It has also indicated several products of import interest to Pakistan from other developing countries of Asia.

The study on Sri Lanka observes that its trade relations are mainly dominated by the developed world rather than by the developing countries. Agricultural products like tea, rubber and rubber products, coconut and coconut products still account for bulk of its exports. Its economy is competitive with respect to tea with India and Bangladesh, rubber with Malaysia, Indonesia and India and to Philippines in case of coconut and coconut products. Sri Lanka's imports from South Asia declined sharply during the period under study, while those from ASEAN countries increased marginally. The study presents estimates of indices of trade intensites, intra-regional trade and trade reciprocities at selected points of time. It has also identified several products where substantial scope exists for mutual trade expansion between Sri Lanka and other countries of South Asia and also of the ASEAN grouping.

Regarding joint industrial ventures, the study observes that the change in government policy since 1977 towards foreign investments and joint ventures has led to substantial interest among the entrepreneurs in India and Singapore for investment in Sri Lanka. Foreign investment collaborations have mainly come from developing countries which include Singapore, India and Hong Kong. The study also presents short case studies of 17 joint ventures operating in Sri Lanka.

For the region as a whole the study observes that intra-regional trade among the countries of South Asia and the ASEAN sub-regions as a proportion of their world trade has increased at an extremely slow pace. The developing countries of Asia still trade heavily with the developed countries of the west and they trade very little among themselves. The reasons for this lie partly in their historical past and partly in the policies that are being pursued by their governments. In their post-independence period these countries adopted a policy of import substitution and export promotion for industrialisation which severely limited the scope of their trade within the region. Recent need for South-South economic cooperation is being felt by the countries of ESCAP region because of the changing conditions of world trade. The developed countries of the west are facing recession for almost a decade and there seems to be no end to it soon. Their protectionist policies have severely limited the scope of manufactured exports from the developing countries. On the other hand, some of the countries of the Asian region have shown healthy growth and have been providing expanding markets for the expansion of trade within the region. However, greater reliance will have to be placed on bilateral trade arrangements before moving to multilateral trade. The country papers have roughly indicated some specific products in which exports and imports can be developed with mutual benefits. They have also provided indicative list of industries in which joint ventures can be set up within the countries of the Asian region. The need for developing certain services in the countries of this region has also been emphasised which include shipping and transport, communications, provision of long-term export credits, joint marketing in selected products and establishment of a regional centre for trade information. It has also been emphasised that there is need for formulating special measures to protect the interest of the smaller and lesser industrialised countries of the Asian region.

The book is largely successful in attaining the objectives laid down. It provides a comprehensive study of the trade relations among the countries of the Asian region. It has also provided some answer for the slow growth of economic cooperation among these countries but the analysis needs to be more comprehensive as lack of cooperation by these countries in the economic field has to a considerable extent been due to the political factors and psychological inhibitions operating in these countries. A multi-disciplinary approach could be much nearer to reality. Moreover, the very assumption of the study that there exists a high degree of complimentarity in the economies of South Asian countries is questionable and needs further investigation. Most of these economies are competitive rather than complimentary both in manufactured as well as primary products. There may be some traces of complimentarity in their economies but it cannot be categorised of a high order. However, with further industrialisation of these countries and suitable changes in their industrial structure their economies may become complimentary to some extent. This will require some sort of regional planning for the allocation of resources and fixing of priorities in the region. It will also need the development of an Asian Common Market with minimum of trade barriers among the countries of the region. But alas all this is a remote possibility under the present political environment.

EXPORTS AND DEVELOPMENT, THE INDIAN EXPERIENCE

By RAMESHWAR TANDON AND NEELAMBAR HATTI; published by Ashish Publishing House, New Delhi, 1987; pp. 422; price (cloth) Rs. 300.

Reviewed by P. ABDUL KARIM, Institute for Social and Economic Change, Bangalore, India.

This study looks afresh at the Indian Trade Policy Regime since the 1967 devaluation. The authors are also concerned with various interactions between the hypothesis put forward by Raul Prebisch and Hans Singer on the distribution of gains from trade. They also look into various policy implications by studying movements in the Indian terms of trade. While it is better for a country to gain more from trade than less, but to gain less from trade than one's trading partners, does not mean that it is better not to trade at all. In the Indian development strategy, the Mahalanobis model led to significant shifts in the industrial structure. The limits of this strategy became obvious in the late 1960s when the economy faced various structural constraints.

The era of decontrols in the late 1960s and the 1970s got powerful support from the 'efficiency' case as developed by Bhagwati-Desai, Srinivasan and Krueger. But the Indian experience of the last two decades proved the above case wrong and also reduced the predictive value of various results. Now there is need for broader macro-economic framework to study the overall effects of export growth on the domestic economy.

With a view to understand the effects of such a strategy, study of the development regime and its working through QR framework on the balance of payments is very crucial to highlight the relationship between policy variables in domestic sector and the instruments of this policy in the trade sector. The quantitative measure of static efficiency used is the variance in the ERP and DRC across the sectors. This might also indicate impact of effective exchange rates and incentives to export or import which is reflected in the movement of terms of trade indices.

The Prebisch-Singer hypothesis of secular decline does not go very well in the neo-classical theory, where various institutional, cyclical and technical change aspects are neglected. In emphasizing labor pressure, Prebisch was anticipating Arthur Lewis, while Nurkse interpreted 19th Century development as a result of relations between export demand for primary goods and foreign investment, really this type of development was better than no growth at all.

Hans Singer in his 1982 paper (Terms of trade controversy and the evolution of soft financing; early years in the UN, World Bank) suggested that the periphery, even during the 1960s, by providing the centre with steady supplies of labour and primary goods, were engine of growth for industrial countries through 25 golden years after second world war.

The authors find that in the Indian development strategy, rapid accumulation via industrialisation was meant to achieve high rate of growth of national income. The inter-industry differences in growth rates show significant shifts in the structure of industrial production. While over 1951–65 period, industrial production grew at the rate of 7.8 p.c. per annum, this rate came down to 3.6 p.c. during 1965–75. The unspecialised nature of industry is shown by marked shift in the composition of industrial production.

For the industrial stagnation since 1965, various explanations were offered e.g. periodic shocks to the economy-war in 1965 and 71, oil crisis in 1973, the droughts in 1965, 1967 and 71–72 along with bottlenecks of infrastructure. Bhagwati and Desai held that the policy framework was detrimental to growth by adversely affecting export performance, by wasteful inter-industrial allocation of resources by allowing expansion of excess capacity and by blunting competition.

While Chakravarty, Vaidyanathan and K. N. Raj explain industrial decline in terms of poor agricultural performances, authors find no continuous improvement in terms of trade of agriculture against industry and rather long term upward trend in both prices received and paid by agriculture. In the Indian case, the rate of growth of industrial production could not occur on sustained basis because neither the home market nor a foreign market could absorb them. The narrow demand base proved major constraint. Moreover excessive private investment in luxury consumer goods led to excess capacity and high capital intensity.

In the study of export subsidization during 1968–72 period, authors find these measures proved quite efficient. Due to overall complexity of the system, precise quantification is not possible. Staelin analysed incentive system in terms of a non-linear porgamming model. It is difficult to work out effective rate of subsidy due to frequent changes in commodity classification. The subsidy system could be criticised for alleged distortions.

As for policy planning in foreign trade sector, the government approach to export raises issues more fundamental than of merely rationalising export promotion measures. The aim of export policy is not to maximize exports but rather to minimize the social domestic resource cost of learning 'net' inflow of foreign exchange. Also there is no denying the fact of ever-increasing dependence of the economy and industrial sector on exports. The message of the Tandon Committee was clear that there cannot be sensible export policy without creating conditions conducive to growth of export system.

The authors rightly emphasize that we should not combine the issue of subsidy elimination and right pricing system. We have several administered prices along with market reallocations that lead to distortions. The real issue is who benefits from the subsidy-induced lower prices and whether beneficiaries are right kind of people. The cash compensatory support system is preferred to general devaluation because it can be operated with discrimination.

In the study of Indian terms of trade, authors find the import unit value index was steady in the early 1960s, the export value index showed marginal improvement upto 1965 and there was marked upward trend that continued in the early 1970s. But it is true that there was significant rise in the nominal value of exports in the early 1970s. it is also certain that the economy's capacity to import declined sharply from 1975 onwards for next several years. The same was the case of purchasing power of export. Recent study of Martin Wolf pinpoints growth in the purchasing power that would have occurred, only if the export value/volume or only terms of trade had changed, as they did (*India's Exports*, Oxford University Press, 1982, p. 19).

In the Neo-classical critique of trade policy system, the case was made that Indian policy package led to inefficient choice of products in industries and the 'real' resource cost of meeting final bill of goods and services through alternative export-led policies could have been much lower. Recent studies on optimal trade policy admit the possibilities of market failure and a case is made that even with such distortions, foreign trade is the last place for state intervention. The departure from unified exchange rates can be justified only when there are trade distortions in the economy e.g. monopoly or monopsony for tradeables in the country. Hence tax-subsidy policy for use of domestic factors of production or production subsidy is recommended. It was suggested that the pattern of incentives under outward-oriented strategy turns out to be less chaotic than those under import substitution.

The results of 'Expost' DRC help us to identify the cost-efficient sectors and areas of maximum export promotion. Various DRC estimates convey an idea of cost implications of changing structure of manufacture exports. The sectoral approach to measurement of DRC is not enough, as sectors are heterogeneous. For correct analysis DRC estimates should be done on the basis of proper sequence of costs and benefits.

Looking back at the performance of Indian economy, in the 1970s, the authors find the neo-classical case has been proved wrong in terms of growth of macro-variables like savings, investment and technical progress. Recently various doubts were also raised about the prospects of success of liberalization package and the need for quantum jumps in exports as suggested by the Hussain Committee. Following Kaldor-Verdoorn theories, now in the late 1980s, there is need to underline the role of increasing rate of domestic output-growth affecting 'positively' the rate of productivity growth through scale economies and learning-by-doing and improving the economy's international competitiveness.

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TABLE 15

POPULATION BY EMPLOYMENT STATUS

(10 thousand)

Year	Population 15 years old and above	Labour force			Unemployment rate (%)
		Total	Employed	Unemployed	
			Total		
1975	8443	5323	5223	100	1.9
1980	8932	5650	5536	114	2.0
1985	9465	5963	5807	156	2.6
1986	9587	6020	5853	167	2.8
1987	9720	6084	5911	173	2.8
			Males		
1975	4099	3336	3270	66	2.0
1980	4341	3465	3394	71	2.0
1985	4602	3596	3503	93	2.6
1986	4662	3626	3526	99	2.7
1987	4726	3655	3551	104	2.8
			Females		
1975	4344	1987	1953	34	1.7
1980	4591	2185	2142	43	2.0
1985	4863	2367	2304	63	2.7
1986	4925	2395	2327	67	2.8
1987	4995	2429	2360	69	2.8

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 16
EMPLOYED PERSONS BY INDUSTRY

Industry	1975	1980	1985	1986	1987	Males (%)
Total	5223	5536	5807	5853	5911	60.1
Agriculture and forestry	618	532	464	450	446	50.2
Fisheries	43	45	45	45	43	74.4
Mining	16	11	9	8	8	87.5
Construction	479	548	530	534	533	85.2
Manufacturing	1346	1367	1453	1444	1425	60 8
Wholesale and retail trade, eating and drinking places	1127	1248	1318	1339	1366	52.2
Finance, insurance and real estate	170	191	217	225	234	53.0
Transport and communication	332	350	343	353	348	86.5
Electricity, gas and water	32	30	33	32	31	87.1
Services	855	1001	1137	1205	1255	49.6
Government	196	199	199	197	198	82.8

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 17
EMPLOYED PERSONS BY OCCUPATION

(10 thousand)

Occupation	1975	1980	1985	1986	1987	Males (%)
Total	5223	5536	5807	5853	5911	60.1
Professional and technical workers	364	438	538	544	608	56.7
Administrative and managerial workers	206	220	211	213	223	92.4
Clerical and related workers	820	924	1021	1032	1031	42.4
Sales workers	738	797	861	883	908	62.1
Farmers, woodsmen and fishermen	654	570	502	489	484	52.5
Mining workers	9	5	4	4	4	100.0
Transport and communication workers	237	248	227	231	223	95.5
Craftsmen and production process workers	1580	1653	1689	1693	1648	69.4
Labourers	148	168	230	230	239	56.5
Protective services and other service workers	457	501	501	514	518	45.4

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 18
MONTHLY INCOME AND EXPENDITURE (WORKER HOUSEHOLDS)

(1000 Yen)

	1970	1975	1980	1985	1986	1987
Income	112.9	236.2	349.7	444.8	452.9	460.6
Wages and salaries	105.5	222.5	330.6	419.6	427.1	431.4
Others	7.5	13.7	19.1	25.2	25.8	29.2
Disposable income[1]	103.6	215.5	305.5	373.7	379.5	387.3
Expenditures	91.9	186.7	282.3	360.6	367.1	369.2
Consumption expenditures	82.6	166.0	238.1	289.5	293.6	295.9
Food	26.6	49.8	66.2	74.4	74.9	73.4
Housing	4.4	8.4	11.3	13.7	14.2	15.2
Fuel, light and water charges	3.4	6.9	12.7	17.1	16.9	15.7
Furniture and household utensils	4.2	8.2	10.1	12.2	11.9	12.6
Clothing and footwear	7.7	14.9	17.9	20.2	20.6	20.8
Medical care	2.1	4.0	5.8	6.8	7.0	7.3
Transportation and communication	4.6	10.9	20.2	28.0	28.8	30.1
Education	2.2	4.4	8.6	12.2	13.1	13.6
Reading and recreation	7.6	14.1	20.1	25.3	26.1	26.1
Other expenditure	19.8	44.4	65.1	79.7	80.1	81.2
Non-consumption expenditures[2]	9.3	20.6	44.1	71.2	73.4	73.3
Surplus[3]	21.1	49.5	67.4	84.2	85.9	91.4
Average propensity to consume (%)[4]	79.7	77.0	77.9	77.5	77.4	76.4
Average propensity to save (%)	20.3	23.0	22.1	22.5	22.6	23.6

[1] Consumption expenditures plus surplus.

[2] Income taxes, social security contributions, etc.

[3] Surplus = (Disposable income) – (Consumption expendiures); Time deposits, life insurance, bonds and securities, as well as real assets (land, houses, precious stones, etc).

[4] Ratio of consumption expenditures to disposable income.

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 19

AMOUNT AND COMPOSITION OF SAVINGS AND LIABILITIES (WORKER HOUSEHOLDS)

(1000 Yen)

Year	Yearly income	Savings					Liabilities		Percentage of liabilities for a home or land
		Total	Demand deposits	Time deposits	Life insurance	Securities	Total	For a home or land	
1970	1402	1262	178	424	301	252	191	146	76.4
1975	2986	2636	367	1122	493	470	719	600	83.4
1980	4493	4734	427	2326	929	791	1512	1376	91.0
1984	5453	6489	483	3008	1477	1191	2362	2198	93.1
1985	5655	6920	499	3222	1623	1237	2502	2316	92.6
1986	5851	7329	504	3266	1828	1385	2647	2465	93.6
1987	6069	8194	588	3425	2023	1799	2825	2555	90.4

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 20
CONSUMER PRICE INDEXES

(1985 = 100)

Year	All items	Food	Housing	Fuel, light and water charges	Furniture and household utensils	Clothing and footwear	Medical care	Transport and com- munication	Education	Reading and recreation	Miscella- neous
1970	36.9	37.3	35.1	34.3	47.7	35.3	48.9	39.6	22.2	39.1	37.3
1975	63.3	67.0	58.7	54.1	79.4	65.5	65.7	60.6	42.5	66.9	57.4
1978	78.1	80.7	76.2	64.7	85.2	77.9	81.9	79.8	64.3	79.1	75.7
1979	81.0	82.4	80.5	67.7	86.7	81.7	83.7	84.6	70.1	81.7	77.9
1980	87.3	87.4	85.5	90.4	92.9	86.1	85.1	90.0	76.6	87.6	87.3
1981	91.5	92.0	89.3	97.4	97.1	89.6	87.5	93.1	82.4	92.0	91.3
1982	94.1	93.7	92.5	100.8	97.9	92.2	90.0	97.8	87.4	93.8	92.9
1983	95.8	95.6	95.4	100.5	98.5	94.3	91.2	97.0	91.7	96.1	96.5
1984	98.0	98.3	97.5	100.4	99.3	96.7	94.5	97.9	95.7	98.0	98.7
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100 0	100.0
1986	100.6	100.2	102.5	95.0	100.0	102.2	101.9	99.3	103.6	101.5	102.0
1987	100.7	99.3	105.4	88.0	99.4	103.3	103.8	100.0	107.1	102.0	103.2

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 21
CONSUMER PRICE INDEXES BY COUNTRY

(1980 = 100)

Year	Canada	France	Germany F.R.	Italy	Japan	U.K.	U.S.A.
1979	90.7	88.2	94.9	82.5	92.8	84.8	88.1
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	112.4	113.4	106.0	119.5	104.9	111.9	110.4
1982	124.6	126.8	111.9	139.2	107.8	121.5	117.1
1983	131.8	139.0	115.6	159.5	109.9	127.1	120.9
1984	137.5	149.3	118.4	176.8	112.3	133.5	126.1
1985	143.0	157.9	121.0	190.3	114.6	141.6	130.5
1986	148.9	161.9	120.7	204.3	115.3	146.4	133.1

Source: International Monetary Fund.

TABLE 22
OVERALL WHOLESALE PRICE INDEXES

(1985 = 100)

	1970	1975	1980	1982	1983	1984	1985	1986	1987
Basic groups									
All commodities	48.6	76.2	100.5	103.7	101.4	101.1	100.0	90.9	87.5
Manufacturing industry products									
Average	52.4	79.0	100.7	102.6	101.1	101.0	100.0	92.8	89.7
Processed foodstuffs	44.1	72.6	90.5	94.9	96.8	99.8	100.0	99.4	98.5
Textile products	62.4	81.3	99.0	101.5	99.2	101.1	100.0	91.8	90.5
Lumber and wooden products	53.3	79.6	122.0	107.8	102.5	100.5	100.0	95.2	105.0
Pulp, paper and related products	46.3	79.3	105.8	101.2	98.2	101.8	100.0	96.3	94.5
Chemicals	50.4	84.1	110.6	106.6	103.7	102.1	100.0	89.4	85.7
Petroleum and coal products	18.1	48.4	95.3	112.1	107.1	100.6	100.0	76.9	64.3
Ceramics, stone and clay products	41.1	68.5	98.5	103.3	102.7	103.0	100.0	98.1	96.5
Iron and steel	55.7	78.6	102.6	105.0	100.6	101.4	100.0	90.1	86.9
Nonferrous metals	67.7	81.8	125.1	104.7	107.5	105.0	100.0	83.2	83.1
Metal products	51.4	79.9	96.5	96.6	96.9	99.9	100.0	98.4	95.6
General machinery[1]	60.8	90.2	98.2	101.0	99.7	99.8	100.0	96.3	93.8
Miscellaneous products	41.9	74.9	96.0	99.2	99.8	100.9	100.0	97.3	95.3
Agricultural products[2]	52.7	83.2	106.0	104.6	103.9	104.3	100.0	91.0	96.7
Mining products	20.2	56.3	98.2	117.6	104.2	99.5	100.0	96.4	50.8
Electric power, gas and water	26.0	48.7	88.2	98.7	98.8	99.7	100.0	95.3	89.0
Scrap and waste	87.0	100.7	134.9	98.3	106.0	109.5	100.0	66.5	68.8
Special groups by stage of demand and use									
Domestic demand products									
Average	47.0	74.5	100.3	103.3	101.5	101.1	100.0	91.8	88.5
Raw materials	30.7	65.0	102.7	113.4	104.5	101.9	100.0	66.5	62.4
Intermediate materials	45.1	71.9	102.7	103.4	102.1	101.6	100.0	92.0	88.0
Final goods									
Average	55.7	81.4	95.8	99.5	99.5	100.0	100.0	97.9	95.7
Capital goods	61.0	87.2	96.2	99.9	99.9	99.9	100.0	97.7	95.3
Consumer goods	53.6	79.4	95.7	99.3	99.4	100.0	100.0	98.0	95.7
Exports	71.3	96.6	102.0	107.3	100.8	101.5	100.0	84.9	80.6

[1] Including precision instruments.

[2] Including forestry and aquatic products.

Source: The Bank of Japan.

TABLE 23
MEDICAL SERVICES

Year	Hospitals[1]	Beds (1000)	General clinics	Dental clinics	Physicians[2]	Dentists[2]	Pharmacists[2]	Clinical nurses[2]
1970	7974	1063	68997	29911	117195	36914	65179	126476
1975	8294	1164	73114	32565	131010	42577	77084	174310
1980	9055	1319	77611	38834	154578	52369	95319	245495
1984	9574	1467	78332	43926	179358	61911	108806	303734
1985	9608	1495	78927	45540	—	—	—	—
1986	9699	1534	79369	47174	189531	65605	114680	333040

[1] With 20 or more beds.

[2] Those who are practising medical services only.

Source: Ministry of Health and Welfare.

TABLE 24
SCHOOLS (1987)

Level of education	Schools				Teachers[1] (1000)	Students (1000)	
	Total	National	Public	Private		Males	Females
Elementary schools	24933	73	24692	168	449	5238	4989
Lower secondary schools	11230	78	10555	597	292	3113	2969
Upper secondary schools	5508	17	4191	1300	275	2707	2662
Technical colleges	62	54	4	4	4	48	2
Junior colleges[2]	561	38	53	470	19	40	397
Universities[2]	474	95	37	342	116	1457	477
Graduate schools	—	—	—	—	—	68	11
Special training schools	3152	173	179	2800	27	294	359
Miscellaneous schools	3918	7	97	3814	21	231	235
Kindergartens	15156	48	6263	8845	98	1027	989

[1] Full-time teachers.

[2] Including the students in advanced courses and short-term courses, and part-time students.

Source: Ministry of Education.

TABLE 25
RESEARCH ACTIVITIES OF SCIENCE AND TECHNOLOGY

Year	Total	Companies	Research institutions	Universities and colleges
		Researchers		
1970	286439	97950	29645	158844
1975	396216	149014	39010	208192
1980	387119	175184	41273	170662
1985	480108	233070	51260	195778
1986	507595	253542	53179	200874
1987	523934	262819	55289	205826
		Expenditure on research and development (million yen)[1]		
1970	1355505	823265	166363	365877
1975	2974573	1684847	449928	839798
1980	5246248	3142256	763918	1340074
1985	8890299	5939947	1160571	1789780
1986	9192932	6120163	1240194	1832575

[1] Fiscal year.

Source: Statistics Bureau, Management and Coordination Agency.

TABLE 26
NET FLOW OF DEVELOPMENT ASSISTANCE

(US $ million)

Disbursements	1975	1980	1984	1985	1986
Total resource flows	2890	6766	15070	11618	14809
Total resource flow as % of GNP	**0.59**	**0.65**	**1.20**	**0.87**	**0.75**
Official development assistance	1148	3304	4319	3797	5634
Bilateral official development assistance	850	1961	2427	2557	3846
Grants and grants-like contributions[1]	202	653	1064	1185	1703
Development lending and capital	649	1308	1364	1372	2143
Contribution to multilateral institutions	297	1343	1891	1240	1788
Other official flows	1370	1478	743	−302	−724
Grants by private voluntary agencies	10	26	41	101	82
Private flows at market terms	363	1958	9968	8022	9817

[1] After 1983, including administrative costs.

Source: Ministry of Foreign Affairs.

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